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INTERMOD 1.1
A G-7 VERSION OF THE IMF'S MULTIMOD

by

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ABSTRACT

This paper describes the structure of INTERMOD, a linked international model constructed at the Department of Finance using annual data. Our model follows closely the structure of a policy simulation model developed at the IMF (MULTIMOD), which employs a highly-aggregated and common structure for each of the industrial countries. The most important difference is that INTERMOD has separate blocks for each of the G-7 countries whereas MULTIMOD aggregates the four smaller countries (France, the U.K., Italy, and Canada) into a single region. Both models contain blocks for the aggregate of the eleven smaller industrial countries and the developing countries. INTERMOD can be run under either adaptive or model-consistent expectations regimes, while MULTIMOD employs only consistent expectations. Finally, INTERMOD can be used in both mainframe and PC environments, making it accessible to a wider group of researchers than has traditionally been the case.

Our discussion of the structure of INTERMOD focuses on the relationship between consumption and wealth, the role of fiscal policy in influencing aggregate demand, the specification of international linkages, and the modelling of expectations. This is followed by a comparison of simulation results for INTERMOD, MULTIMOD, and other linked international models. Operation of the model in a PC environment is then described. The paper concludes with a discussion of possible policy applications and avenues for further development. A detailed listing of simulation results and the model structure is provided in an appendix to the paper.

RÉSUMÉ

Ce document décrit la structure du modèle INTERMOD, un modèle international mondial construit par le ministère des Finances à partir de données annuelles. Notre modèle reprend presque intégralement la structure d'un modèle de simulation de politiques macroéconomique par le Fond Monétaire International (MULTIMOD), qui utilise une structure commune hautement agrégée pour chaque pays industrialisé. La différence majeure est qu'INTERMOD comporte des blocs distincts pour chacun des pays du Groupe des 7 alors que MULTIMOD réunit dans une même région les quatre plus petits pays du Groupe, soit la France, le Royaume-Uni, l'Italie et le Canada. Les deux modèles incluent des blocs pour le regroupement des onze pays industrialisés plus petits et des pays en voie de dévelopement. INTERMOD peut être exploité aussi bien dans un régime adaptif que dans un régime d'attentes rationnelles, alors que MULTIMOD ne fait appel qu'à de telles attentes. Enfin, INTERMOD peut être exploité aussi bien sur un ordinateur central que sur un micro-ordinateur, ce qui le rend accessible à un plus grand nombre de chercheurs que par le passé.

L'exposé de la structure d'INTERMOD porte principalement sur le rapport entre la consommation et la richesse, l'influence de la politique budgetaire sur la demande globale, les particularités des liens internationaux et l'établissement de modèles d'attentes. Cet exposé est suivi d'une comparaison des résultats de simulation obtenus avec INTERMOD, MULTIMOD et d'autres modèles globaux internationaux. On décrit ensuite la façon d'utiliser le modèle avec un micro-ordinateur, puis on traite des applications possibles de politique économiques et des avenues de recherche ultérieure. En annexe figurent une liste détaillée des résultats de simulation et la structure du modèle.

INTERMOD 1.1: A G-7 Version of the IMF's MULTIMOD

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1. Introduction

In this paper we describe the structure, properties, and uses of a new multicountry model estimated with annual data. The structure of the model is designed to reveal the main macroeconomic relationships among the major industrial countries, and the trade and investment linkages between the industrial and developing countries, with special attention to crude oil and to other primary commodities. The model contains separate equation blocks for each of the G-7 economies, for the next eleven industrial countries treated as a group, and for developing countries, among which high-income oil producers are treated separately from the rest.

The structure of the model is directly based on that of the IMF's MULTIMOD (Masson et al, 1988a, 1988b). Version 1.0 of INTERMOD was designed to have parameters and properties as similar as possible to those of the version of MULTIMOD documented in an IMF Working Paper in March, 1988 (Masson et al 1988a). The subsequent version of MULTIMOD, published as an IMF World Economic Outlook Staff Study (Masson et al 1988b), is matched by version 1.1 of INTERMOD, as described in this paper.

MULTIMOD and INTERMOD are examples, along with the model of John Taylor (1988), of a new breed of estimated multicountry models designed to bridge the potential gaps between theory and practice, and between the models and their users.[1] These objectives are achieved by keeping the size of the national blocks small enough that their theoretical structure can be fairly easily understood and tested against alternatives. If models are not to be 'black boxes', considerable care and clarity are required in the design and presentation of their theoretical and empirical properties. These models also use the same basic theoretical structure for each of the national blocks. This requires that the structure chosen be general enough to capture international differences in economic institutions, but offers several compensating advantages:

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[1] The Comet model for the EEC countries was an early example of the breed. Like the Taylor model, it covered a particular set of countries (the EEC for Comet, the G-7 for Taylor) rather than the entire world economy. Comet and other multicountry models are surveyed in Helliwell and Padmore (1984). The U.K. Treasury's Global Economic Model (GEM, Horton 1984), now managed by the U.K. National Institute for Economic Research, is another small estimated global model. Another way of obtaining small models with more transparent structure is through the construction of minimodels (Haas and Masson 1986) or 'maquettes' (Deleau, Malgrange and Muet, 1984) that attempt to replicate the key properties of established larger models. Masson (1988) describes a methodology for deriving small models from their larger parents.

-The use of a common structure permits the pooling of time-series and cross-sectional data, and offers the twin advantages of methodical testing of the size and significance of international differences and more efficient estimation of parameters that can be treated as common among some or all countries.

-The use of a common theoretical structure simplifies and clarifies the programming and description of the model.

-The use of a common structure and comparable data makes possible a much more systematic form of comparative macroeconomics, and permits a clearer understanding of the reasons for asymmetries in international linkages.

-Taking more systematic account of various trends towards greater globalization can only be achieved in a consistent manner if the theory and structural forms are similar in each of the national blocks.

Working in close cooperation with the IMF research team, we have extended MULTIMOD in two main directions. The main difference between the two models is in the extent to which the major industrial countries are given individual treatment. MULTIMOD treats France, the United Kingdom, Italy and Canada as a single country, and thus contains separate national blocks only for the three largest G-7 economies: the United States, Japan and West Germany. INTERMOD's symmetric treatment of each of the G-7 economies, which could also be adopted for use in MULTIMOD, is designed to track the main macroeconomic variables that are used as indicators in the periodic discussions at the G-7 summits and among G-7 finance ministers and central bank governors.

The second main development has been to design software that can efficiently use the model in a PC environment. MULTIMOD was developed to use TROLL (MIT 1983) on a mainframe computer, and is always run under model-consistent or rational expectations[2], making use of a new TROLL subroutine embodying the Fair-Taylor (1983) algorithm for obtaining model-consistent forward solutions for those variables (prices, interest rates and exchange rates) for which there are explicit forward-looking expectations in INTERMOD and MULTIMOD. INTERMOD is able to run on TROLL under both consistent and adaptive expectations, thus facilitating the comparison of the properties of alternative expectations mechanisms. The Fortran-based PC software is also

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[2] Most of the macroeconomic literature, following Muth (1961), uses the term 'rational expectations' to define expectations that are consistent with the forecasts of the model used for analysis. Walters (1971) suggested that the term 'consistent' would be a more accurate description, and Masson et al (1988b) further refine this to be 'model-consistent'. We shall generally use the latter term, to match the IMF terminology and to avoid possible later confusion when consideration is given to modelling learning behaviour in ways that assume rational behaviour under uncertainy and costly information, but where the resulting expectations may not be identical with specific forward solutions of the underlying model.

able to run both adaptive and consistent expectations versions, something that was previously feasible only on mainframe or large minicomputers. These developments are intended to make models of this sort much more widely available and understood, so that their use need not be restricted to a few specialized research teams.[3]

There are five further sections to the paper, supplemented by an Appendix containing a listing of coefficients, variables, and the equations for a typical country block, and for the trade structure of the developing countries. We start with an overview of the structure of the model, keeping our exposition brief, because of the more extended description already made available by Masson et al (1988b), but trying to outline the main features sufficiently well to permit the properties to be understood. Section 3 presents some results of simulations revealing the model's key properties, with special emphasis on explaining the differences between the results from the consistent and adaptive expectations versions. Section 4 describes the operating characteristics of the alternative versions, with special emphasis on the new PC software, and on our experiments designed to increase the operating efficiency of the Fair-Taylor algorithm.

In section 5 we turn to consider some possible future applications of the model to policy issues, with special reference to how it might assist the presentation and interpretation of macroeconomic indicators for the G-7. Since this discussion will expose a number of areas for further development of the model, it leads quite naturally into section 6, where we outline what seem to us to be some promising lines for research and model improvement, whether by ourselves or others.

2. An Overview of the Structure of INTERMOD

In this part of the paper, we first present, in sections 2.1 to 2.3, the main features of the equations describing the behaviour of the private and public sectors in each of the industrial countries. This can be done in a compact way, since the same model structure is applied in each of the G-7 economies, and in the group of eleven other industrial countries, which are treated as though they were a single aggregate economy. Parameters are generally permitted to vary among countries, at least in cases where the data show significant international differences to be present. In some cases, common estimates are used where separate estimates for each country are implausible, are unavailable, or are statistically indistinguishable from each other.

After our review of the structure of the expenditures and trade of the

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[3] To further increase the accessibility of the model, and to permit alternative equations to be developed and easily compared, we are working towards modifying the IMF's database so that all of the data are drawn from standard machine-readable sources. This also permits the data to be regularly updated by individual model users.

industrial countries, we then turn, in section 2.4, to consider the determination of income, trade, and investment in the rest of the world, with particular emphasis on the special treatment accorded to primary commodities, to the high-income oil producers, and to the links between commodity prices and the investment and growth of the developing countries.

2.1. Aggregate Demand

Aggregate demand in the model is based on separate behavioural equations for consumption, investment, exports, and imports. Real government spending on goods and services is exogenous, while taxes adjust over time to satisfy the inter-temporal government budget constraint.

2.1.1. Consumption

The consumption function reflects both the long-term relationship between consumption and wealth as well as the short-term correlation with changes in disposable income. In constructing wealth, households are assumed to be Ricardian-equivalent in that they perceive the present value of taxes to equal that of government spending and bonds. Thus, along the steady-state growth path, wealth equals the real value of financial assets, excluding government bonds, plus the discounted value of net income adjusted for the share of government spending. Deviations of these variables from their steady-state growth paths are weighted according to speeds of adjustment to equilibrium values estimated using historical auto-regressions. The exception involves the long-term real interest rate -- deviations from its long-run value are not reflected in wealth changes, but rather the effect on consumption is freely estimated in the consumption function. The definition of real wealth in the model is then expressed as follows (where BAR indicates the steady-state value of the corresponding variable):[4]

```
W  =  M/P + NFA/(P*ER) + (RHOBAR*NDPCAP*(1-GBAR))/RLBAR*

      (1 + (RLBAR/(RL + w1))*(CU-CUBAR) +

      (RLBAR/(RL + w2))*(RHO-RHOBAR) +

      (RLBAR/(RL + w3))*(G-GBAR)/(1-GBAR)) ,
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[4] The actual model coding includes government bonds in wealth multiplied by the parameter (1-LAMBDAB). In practice, LAMBDAB is set equal to one so this term drops out of the expression for wealth.

where:
- W - real wealth
- M - high-powered money balances
- P - absorption deflator
- NFA - net foreign assets (denominated in U.S. dollars)
- ER - price of domestic currency in U.S. dollars
- RHO - ratio of GDP deflator to absorption deflator
- NDPCAP - capacity net domestic product
- G - ratio of government expenditures to GDP
- RL - real long-term interest rate
- CU - capacity utilization rate
- w_1 - weight associated with deviation from steady-state value.

As some households are assumed to be liquidity-constrained in the initial period, disposable income is entered as a separate explanatory variable in the consumption equation. Government spending on goods and services is assumed to be separable from private consumption in the utility function, and thus does not enter into the relationship. This gives the following specification (where del(x) denotes the one-period change in x):

$$del(log(C)) = c0 + c1*log(W_{-1}/C_{-1}) + c2*del(RLR) + c3*del(log(YD)) ,$$

where:
- C - real consumption
- RLR - real long-term interest rate
- YD - real disposable income.

The estimated slope parameters are constrained to be equal across the industrial countries. The detailed estimation results are presented in Table 2.1 in the Appendix. The values of the slope parameters are: c1=.112, c2=-.222, c3=.514. In the long run, consumption is homogeneous in wealth; its level also depends on the growth rate of disposable income.

2.1.2 . Investment

Investment, defined as the sum of residential and non-residential fixed investment, is specified as a process of partial adjustment to a target capital stock. The target capital stock is consistent with the Jorgensonian approach in which the desired stock of capital depends on the level of output and the ratio of the rental price of capital to the price of output.[5] In addition, there is a term which allows the short-run effect of a change in GDP to vary from that given by the partial adjustment process. Finally, a dummy variable captures the effect on investment of the 1973 oil price shock. The

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[5] In MULTIMOD, and in INTERMOD 1.1, the price of capital goods and the output price are assumed to be equal, so that the relative price variable reduces to a proportionate cost of capital.

equation is:

$$\text{del(log(K))} = k0 + k1*\log(GDP_{-1}/K_{-1}) + k2*\text{del(log(GDP))} + k3*CSTCAP + k4*DUM74 ,$$

where:

K	=	net capital stock (including government capital but excluding inventories)
GDP	=	real GDP
CSTCAP	=	user cost of capital
DUM74	=	dummy variable equal to 1 from 1974 on.

The estimated slope parameters are constrained to be the same across countries, with the following values: k1=0.156, k2=0.086, k3=-0.085, k4=-0.012. In the long run, the capital stock is homogeneous in output; the semi-elasticity with respect to the real user cost of capital is estimated to be -0.54. The dummy variable indicates a downward shift in the desired capital stock of 1.2 per cent in the short run and 7.7 per cent in the long run following the 1973 oil price shock.

The user cost of capital is defined in the conventional way as a function of interest rates, depreciation rates, and tax parameters:

$$CSTCAP = (DELTA+RL*(1-CTRATE)-PI) * (1-TXCRED-.2*CTRATE/(RL+.2))/(1-CTRATE) ,$$

where:

DELTA	=	depreciation rate on the capital stock
CTRATE	=	corporate tax rate
RL	=	nominal long-term interest rate
PI	=	expected inflation rate
TXCRED	=	tax credit rate.

2.1.3. Traded Goods

The exports and imports of the home country with each of its trading partners are aggregated into single goods. The necessary aggregation assumptions are consistent with the Samuelson-Kurihara (1980) approach to modelling multilateral trade flows. The weight on each foreign country in the home country's trade equations is derived from a matrix of 1980 bilateral trade flows.

The determination of the prices and volumes of trade in 'manufactured' goods is recursive.[6] The price of home-country exports is a function of domestic and foreign GDP deflators (excluding oil output), where the relative weights on different foreign prices depend on their importance in the home country's export markets. A time trend is included to capture different rates of technical progress in export industries relative to the rest of the economy. The equation is parameterized such that export prices are homogeneous in the sum of domestic and foreign prices in both the short and long run:[7]

$$\Delta\log(PXM) = pxm0 + pxm1*\Delta\log(PGNPNO) + (1-pxm1)*\Delta\log(PFM)$$
$$+ pxm2*\log(PGNPNO_{-1}/PXM_{-1}) + pxm3*\log(PFM_{-1}/PXM_{-1}) + pxm4*T ,$$

where:
- PXM = price of manufactured goods exports
- PGNPNO = non-oil GDP deflator
- PFM = weighted average of foreign GDP deflators converted to domestic currency
- T = linear time trend.

The estimated short-run parameters are country-specific, while the constraint is imposed that the long-run elasticities with respect to domestic and foreign prices be the same across countries. The detailed parameter estimates are presented in Table 2.2 of the Appendix. The low and the high values for each of the parameters are as follows -- pxm1: .458 (France) to 1.000 (U.S.), pxm2: .077 (Germany) to .643 (Italy), pxm3: .047 (Germany) to .394 (Italy), pxm4: -.013 (Japan) to 0 (Germany). The implied weights on domestic and foreign prices in the short run and the (common) long-run values are:

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[6] The term manufactured goods actually refers to trade in all goods and services (except investment income) with the exception of crude oil and imports of commodities from the 'rest of world' region.

[7] This equation differs from the MULTIMOD specification in that parameters pxm3 and pxm4 are implicitly constrained to zero in MULTIMOD.

	Short-Run		Long-Run	
	Domestic	Foreign	Domestic	Foreign
United States	1.00	0.00	0.61	0.39
Japan	0.53	0.47	0.61	0.39
Germany	0.81	0.19	0.61	0.39
France	0.46	0.54	0.61	0.39
United Kingdom	0.74	0.26	0.61	0.39
Italy	0.64	0.36	0.61	0.39
Canada	0.67	0.33	0.61	0.39
Smaller Industrial	1.00	0.00	0.61	0.39

The negative coefficients on the time trend imply a secular decline in manufactured export prices relative to domestic output deflators.

The import price of each country is a weighted average of the export prices of its trading partners converted to units of domestic currency, using 1980 import share weights:

$$PIM = \{ \sum_i (s_i * (PXM_i * ER_i)) \} / ER ,$$

where: PIM = import price deflator
s_i = share of ith country in home country imports.

The volume of imports is a function of total absorption and the price of imports relative to the domestic (non-oil) GDP deflator:[8]

$$\log(IM) = i0 + i1*\log(A) + (1-i1)*\log(A_{-1}) + i2*\log(PIM/PGNPNO) + i3*\log(PIM_{-1}/PGNPNO_{-1}) + i4*T ,$$

where: IM = total manufactured imports
A = real domestic absorption.

The elasticity of imports with respect to absorption is constrained to equal one after two years, but an overshooting (or undershooting) of imports is allowed in the short run. Relative price elasticities are also spread over two years, but show no overshooting in the short run. The time trend captures secular 'opening-up' effects on import volumes associated with world trade

[8] This specification differs from that in MULTIMOD in that the latter includes the lagged value of the dependent variable on the right-hand side, while suppressing the lagged value of the relative price term.

liberalization, the globalization of production decisions, and other factors. The detailed parameters are presented in Table 2.4 in the Appendix. The parameters are country-specific, and lie within the following ranges -- i1: .804 (U.K.) to 1.804 (Small Industrial), i2: -.045 (Italy) to -.765 (Japan), i3: 0 (Germany and U.K.) to -.719 (U.S.), i4: .013 (Italy) to .040 (U.S.). As discussed above, the long-run elasticities of import demand with respect to absorption are all unity; the long-run relative price elasticities are as follows:

	Long-run Relative Price Elasticity of Import Demand
United States	-0.952
Japan	-0.816
Germany	-0.765
France	-0.776
United Kingdom	-0.500
Italy	-0.516
Canada	-0.509
Smaller Industrial	-0.736

The positive coefficients on the time trends reveal secular increases in import shares in all countries.

The volume of manufactured exports is modelled as a function of the import volumes of each country's trading partners and a real competitiveness index that reflects the relative price of home-country exports in foreign markets. The activity effect is captured by a 'foreign markets' variable, constructed as the weighted sum of the import volumes of other countries using the 1980 shares of the home country in each of the foreign import markets. The competitiveness variable is based on relative export prices, using a double-weighting system to capture changes in the share of the home country in foreign markets arising from competitiveness effects. A time trend proxies secular changes in foreign market shares:

$$\log(XM) = x0 + x1*\log(FM) + x2*REER + x3*REER_{-1} + x4*T ,$$

where:
- XM - export volume of manufactured goods
- FM - weighted sum of import volumes of trading partners
- REER - real competitiveness index, defined as home-country export prices relative to those of trading partners.

The parameter x1 has been constrained to unity in estimation, consistent with the income elasticities of export demands being the same across countries. The detailed estimates of the other parameter values are shown in Table 2.3 in the Appendix. The ranges of values are as follows -- x2: -.200 (France, the U.K., and Italy) to -.443 (Japan), x3: 0 (Small Industrial and Rest of World) to -.443 (Japan), x4: -.029 (U.K.) to .025 (Japan). It is important to note

that the parameters on the competitiveness indices do not reflect full price elasticities of export demand, as the FM variables are themselves functions of relative prices in the Samuelson-Kurihara framework. The long-run competitiveness elasticities compare to the total export price elasticities as follows:

	Long-run Competitiveness Elasticity	Long-Run Total Export Price Elasticity
United States	-0.45	-0.68
Japan	-1.01	-1.18
Germany	-0.51	-0.69
France	-0.41	-0.50
United Kingdom	-0.38	-0.51
Italy	-0.48	-0.55
Canada	-0.57	-0.73
Smaller Industrial	-0.38	-0.62
Rest of World	-0.87	-0.89

Simulation of the above block of equations generally leads to a (relatively small) world trade discrepancy in both volume and value terms. For instance, a 1 per cent shock to the U.S. GDP deflator generates a total change in unadjusted world export volumes of US $2.4 billion in 1980 constant dollars. The induced real world trade discrepancy amounts to US $0.3 billion, or 12 per cent of the total change. On the nominal side, the adjustments are somewhat smaller -- the nominal discrepancy is about 7 per cent of the total change in world imports. The discrepancies are allocated in the model based on each country's share in world trade: the volume discrepancy is assigned to the export equations, while the remaining value discrepancy is assigned to the import price equations.

The final elements of the trade block for the industrial countries are the equations for trade in oil and primary commodity imports from the developing countries. The industrial countries' oil production and exports are exogenous in the model. The net oil imports of each of the industrial countries are then determined as the excess of domestic consumption over domestic supply. Oil consumption in each of the industrial countries is a function of domestic output and the relative price of oil, with the constraint that oil consumption be homogeneous in GDP in the long run:

$$\text{del}(\log(\text{COIL})) = \text{coil0} + \text{coil1}*\text{del}(\log(\text{GDP})) + \text{coil2}*\text{del}(\log(\text{POIL}/\text{PGNP})) + \text{coil3}*\log(\text{POIL}_{-1}/\text{PGNP}_{-1}) + \text{coil4}*\log(\text{GDP}_{-1}/\text{COIL}_{-1}) ,$$

where: COIL = real oil consumption
POIL = world oil price converted to domestic currency.

The detailed parameter estimates are presented in Table 2.5 in the Appendix. Coil1 indicates the short-run output elasticity of oil demand; its value ranges from 0.714 (U.S.) to 2.361 (France). Coil2 reflects the short-run price elasticity of demand, which varies from -0.037 (Japan) to -0.138 (Canada). Coil3 and coil4 have common values for all the industrial countries of -0.049 and 0.082 respectively. The long-run relative price elasticity is given by the ratio (coil3/coil4), and equals -0.60.

Commodity imports from the developing countries are modelled as follows:

$$\log(ICOM) = ic0 + ic1*del(\log(GDP)) + ic2*\log(GDP_{-1}) + ic3*\log(PCOM/PGNP) ,$$

where: ICOM = real commodity imports
PCOM = world commodity prices converted to domestic currency .

Unconstrained estimation of this equation yielded implausible parameter values for several of the countries, thus common parameters were imposed across countries. The results are reported in Table 2.6 in the Appendix. The short-run elasticity with respect to output, ic1, is 1.042, while the long-run elasticity is somewhat lower at 0.692. The short- and long-run relative price elasticities are identical at -0.404.

2.1.4 . Fiscal Policy

Government spending on both current and capital goods is exogenous. However, the way in which wealth is constructed constrains somewhat the type of government spending shocks that can be performed. Specifically, anticipated government spending shocks should be consistent with the assumed rate of convergence of government spending to its equilibrium share of GNP. Thus government spending shocks should either decay at a constant rate, or at least be temporary.

Given the assumed path of government spending, taxes are determined endogenously in a way that respects the intertemporal government budget constraint.[9] Specifically, the change in the net tax rate is modelled as a function of both the level and the change in the ratio of government debt to GNP.[10]

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[9] Indeed, this is assumed by households in the calculation of their wealth positions.

[10] Net taxes are defined as total tax revenues less transfer payments.

$$\text{del(TRATE)} = \text{tau1}*((B_{-1}/(PGNP_{-1}*GNP_{-1}) - \text{BRATIO}) + \text{tau2}*\text{del}((B_{-1}/(PGNP_{-1}*GNP_{-1}))) ,$$

where:
- TRATE = ratio of net taxes to nominal GNP
- B = stock of government bonds
- BRATIO = target ratio of government debt to GDP.

The target ratio of government debt to GDP is an exogenous variable, which in simulation exercises is typically set at its pre-shock value. The parameters that determine the speed of adjustment of the tax rate are those used by Masson (1987) to generate stable simulation paths in MINIMOD -- taul is .01 and tau2 is .30. Given a shock to either government spending or taxes, the change in the debt-to-GDP ratio is determined by the interaction of the tax response function and the momentary government budget constraint:

$$\text{del(B)} = R*B_{-1} + (P*G - TAX + GEXOG) - \text{del(M)} ,$$

where:
- R = weighted average of short- and long-term interest rates on government debt
- P = absorption deflator
- G = real government spending on goods and services
- GEXOG = other government spending (excluding debt-service and transfer payments)
- TAX = net tax payments
- M = high-powered money balances.

The initial channel by which a tax cut affects spending is through disposable income and thus consumption (wealth is unchanged). The increase in disposable income is reversed over time, as the fiscal imbalance generated by the tax cut requires a rising ratio of taxes to GDP. Thus the tax cut causes a shift in consumption towards the present from the future, initially stimulating and then depressing aggregate demand. An increase in government spending will stimulate aggregate demand to the extent that there are not exactly offsetting decreases in private spending (specifically, consumption). In INTERMOD, this does not occur for two reasons: (i) government spending shocks are transitory, and (ii) consumption does not respond immediately and fully to the changes in wealth that do take place. Thus fiscal policy has non-neutral effects on aggregate demand in spite of the elements of forward-looking behaviour that are built into the consumption equation.

2.2. Aggregate Supply and Prices

The aggregate supply relationship in the model is rather simple. Potential output is determined by a Cobb-Douglas production function defined (conceptually) over capital and labour inputs. However, the labour sector is

not explicitly modelled -- both the potential labour input and the level of technology are assumed to be exogenous and captured by a constant term and a time trend in the potential output equation:

$$\log(YCAP) = (1-beta)*\log(1+N)*T + beta*\log(K_{-1}) ,$$

where: YCAP = capacity output
beta = capital share in the Cobb-Douglas production function
N = growth rate of effective labour input (including technical change).

Deviations between aggregate demand and capacity output lead to disequilibria in factor markets, as the existence of contracts and other rigidities prevents prices from immediately jumping to their equilibrium level. Instead, output expands and capacity utilization rises above its long-run equilibrium level. This process is embodied in a semi-reduced-form price equation, where the response of factor prices to excess demand has been substituted into a price mark-up equation:

$$del(\log(PGNPNO)) = p1*.5*[\log(CU)+\log(CU_{-1})] + p2*PIE + (1-p2)*del(\log(PGNPNO_{-1})) ,$$

where: CU = the ratio of actual to normal output
PIE = the expected value of absorption inflation in period t+1, as defined below.

The current period rate of inflation is homogeneous of degree one in lagged and expected inflation, implying that the model is 'accelerationist' -- it is the second derivative of the (log of the) price level that responds to the output market gap. The absence of a constant term means that inflation will be stable in the long run when CU equals 1.0, so that its logarithm equals zero. The parameter on capacity utilization is constrained to be the same across countries, while p2 (which is interpreted as reflecting the average contract length) is country-specific. The parameter p1 has a value of 0.15, indicating that a 1 percentage point increase in the capacity utilization rate will raise the inflation rate by 0.15 percentage points. The parameter estimates are reported in Table 2.7 in the Appendix. The weight on expected future inflation versus lagged inflation, which is a measure of the flexibility of price setting behaviour, is country-specific:

	Parameter on Expected Inflation (p2)
United States	0.3639
Japan	0.4931
Germany	0.5652
France	0.3831
United Kingdom	0.4678
Italy	0.4150
Canada	0.3154
Smaller Industrial	0.6381

A difference between the adaptive and model-consistent expectations versions of INTERMOD involves the construction of PIE. An auto-regressive process is estimated for the adaptive expectations version such that expected inflation responds gradually to observed changes in the absorption deflator:

$$PIE = 0.3*PI + 0.7*PIE_{-1} .$$

In the consistent expectations version, PIE equals the model prediction of next period's rate of absorption price inflation. The latter approach tends to make the current-period price level somewhat more sensitive to demand shocks, implying a steeper short-run aggregate supply curve[11].

2.3. Financial Markets

Short-term interest rates adjust to innovations in output and prices such that the target money stock remains at its control solution in the long run when performing policy simulations. Actual money balances can deviate from the target money stock to the extent that the short-run parameters in the money demand function are not equal to their long-run values. Long-term interest rates are then determined by a term-structure relationship that equalizes the holding period yields on short- and long-term assets (the equilibrium yield differential is assumed to be constant). The exchange rate is determined by open interest parity on domestic-currency assets and U.S.-dollar-denominated assets.

The money demand function is a standard model of partial adjustment in real money balances:

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[11] The model is coded such that expectations can be fully adaptive, fully consistent, or a combination of the two. The parameter ADAP is used for this purpose: when ADAP equals 1, expectations are adaptive, while a value of 0 implies consistent expectations.

$$\log(M/P) = m0 + m1*\log(GNP) + m2*RS + m3*\log(M_{-1}/P_{-1}) ,$$

where: M = high-powered money
RS = short-term nominal interest rate in percentage terms.

The estimated parameters are constrained to be the same across countries; the estimation results are reported in Table 2.8 in the Appendix. The short-run elasticity with respect to output changes is 0.174, while the interest rate semi-elasticity is -0.0083. Their long-run values are respectively 1.184 and -0.056. Thus, in the long run, a 5 per cent rise in output has approximately the same effect on money balances as a 1 percentage point decline in short-term interest rates. The interest rate reaction function is based on the long-run parameters of the money demand function and an exogenous money target variable:

$$RS = ((1-m3)*\log(MT/P) - m1*\log(GNP) - m0) / m2 ,$$

where: MT = long-run target money stock.

As noted above, the equation for long-term rates follows from the assumed equality of expected holding-period yields:

$$RL = RS + 100*((RLE/RL)-1) ,$$

where: RLE = the expected value of RL in period t+1 .

There is no explicit representation of RLE in the adaptive expectations version of the model. Rather, RL is a function of RS and lagged RL, which is equivalent to expressing RLE as a (non-linear) function of current and lagged RL. The equation is:

$$RL = 0.3*RS + 0.7*RL_{-1}$$

In the consistent expectations version, RLE is explicitly represented as the model solution for RL in period t+1, thus ensuring that holding-period yields are equalized both **ex ante** and **ex post** in simulation exercises. The long-term real interest rate (RLR) is defined as the difference between the nominal rate and a measure of inflation expectations that reflects the long-term horizon of the instrument:

$$RLR = RL - 0.1*PIE - 0.9*PIBAR .$$

The one-period ahead rate of inflation receives a weight of 0.1 in the relationship, while an exogenous smoothed trend of past inflation rates

receives a weight of 0.9. The exogeneity of PIBAR will not be satisfactory in the case of shocks that permanently change the expected rate of inflation: in such cases PIBAR must be adjusted to be consistent with unbiased long-run inflationary expectations.

It is assumed that the expected yield on domestic and foreign-currency assets differs only up to a constant premium. The bilateral exchange rate is determined by open interest parity on domestic and U.S. dollar assets:

$$ER = ERE * (1+RS/100) / (1+USRS/100) ,$$

where:
- ER = price of domestic currency in U.S. dollars
- ERE = expected value of ER in t+1
- RS = domestic short-term interest rate
- USRS = U.S. short-term interest rate.

The expected exchange rate is defined as the simulated value in period t+1 in the consistent expectations version of the model. In the adaptive expectations version, ERE adjusts gradually based on past and current values of ER:

$$ERE = 0.3*ER + 0.7*ERE_{-1} .$$

2.4. Rest of the World

The rest of the world consists of two separate regions in the model -- the high-income oil producing nations and the rest of the developing world. The first block of countries supplies oil to world markets based on the excess demand of the industrialised countries given the exogenous world relative oil price. The second group of countries supplies three goods to world markets: oil, a manufactured good, and a primary commodity. An important feature of the developing country block is the relationship between their trade balance and external financing constraints: import levels are constrained by the developing countries' perceived ability to service the associated debt.

2.4.1. High-Income Oil Exporters

Output of the manufactured good in the high-income oil exporting countries is exogenous in the model. Oil exports and thus total output are determined by the excess demand of the industrial countries, which is allocated among the high-income oil exporters and the developing countries based on historical market shares. Changes in world oil demand affect domestic income and absorption. Total absorption and relative prices determine the demand by the oil exporters for the manufactured exports of the industrial countries and for the commodity exports of the developing countries.

2.4.2. Developing Countries

The developing countries are assumed to produce four goods: a manufactured good, oil, a primary commodity, and a non-traded good. Oil exports are determined as a fixed share of the excess demand of the industrial countries. Commodity exports are a function of the capital stock in the commodity-producing sector, and are independent of relative prices in the short-run. Thus the world price of commodities is determined in the short run by the intersection of the vertical supply curve and the downward-sloping demand curve of the industrialized countries for commodity imports. Over time, the share of new investment allocated to the commodity-producing sector depends on the price of commodity exports relative to those of the manufactured good, thus the long-run supply of commodities is affected by price considerations. Potential output of the manufactured export is also determined by the capital stock in this sector -- as described above, the share of new investment which goes to manufacturing depends on the relative price of manufactures versus commodities. Actual output, however, depends on external demand conditions -- the relative price of manufactured exports changes over time based on the difference between actual and potential output. The output of the non-traded good is not supply-constrained, and varies in a fixed proportion to aggregate consumption.

On the demand side, total consumption in the developing countries (both public and private) is determined by disposable income and the flow of financing available from the developed countries. The latter depends on the expected future level of the ratio of debt-interest payments to exports (representing potential future debt-servicing problems) as proxied by: expected growth in exports, growth in the existing debt ratio, and real interest rates. Imports are determined residually as the sum of net capital inflows and export revenues. The level of aggregate investment in the manufacturing and commodity-producing industries is then defined as the sum of domestic savings (the excess of output over total consumption) and foreign savings (the excess of imports over exports).

3. Dynamic Properties of INTERMOD

In this section we describe the dynamic properties of INTERMOD, and compare them with those of a number of other multicountry models. Our main experiment involves a simple expansion of real government expenditures, such as already used to expose and compare the properties of other multicountry models in a series of recent conferences. We concentrate on two sorts of comparison. For all of the fiscal policy comparisons shown in this paper, the shock is an increase of real government spending equal to 1% of baseline real GNP, maintained at this level for eight years, and then declining towards

zero.[12] In the first of these, we compare the adaptive and consistent expectations versions of INTERMOD, and show also the results of a comparable fiscal policy shock in MULTIMOD, which is run under the maintained hypothesis of model-consistent expectations.

The results in Figure 3A show the substantial extent to which the consistent expectations models bring forward the price level and long-term interest rate effects of the fiscal expansion.[13] The first-year changes in the variables that depend directly on the alternative expectations regimes are as follows:

	adaptive	consistent
U.S. long-term interest rate	11 b.p.	63 b.p.
U.S. effective exchange rate	0.3 %	2.0 %
U.S. GDP deflator	0.2 %	0.5 %

It is apparent that the increases in the long-term interest rate and the effective exchange rate are about six and seven times larger respectively under model-consistent expectations; the effects on domestic spending and the real trade balance both contribute to reducing the fiscal multiplier in the first year to 1.24 under consistent expectations from 1.54 under adaptive expectations. The consistent-expectations result is similar to that reported for MULTIMOD, which has a multiplier of 1.1 in the first year. Interest rates rise by somewhat less in MULTIMOD than in INTERMOD, reflecting the lower interest elasticity of the long-run demand for money in the latter. On the other hand, the exchange rate appreciation is somewhat greater in MULTIMOD. The impact effect of the U.S. fiscal expansion on the rest of the G-7 is also universally smaller under consistent expectations. Although exchange rates depreciate by more versus the U.S. dollar (except for Canada), the resulting trade stimulus is more than offset by higher long-term interest rates.

The U.S. multiplier peaks under adaptive expectations at 1.75 in the second year, while with consistent expectations there is a steady reduction in

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[12] For some of the other models, the shocks may be reductions rather than expansions, and sometimes they start in different years, depending on the source from which the material is drawn. For most of the other models, the fiscal shock is sustained over six years, the period for which results are analyzed, with no explicit assumptions about what happens thereafter. In a model with forward-looking expectations, like INTERMOD run with model-consistent expectations, assumptions about the subsequent path are necessary, and can make a considerable difference. The length and rate of subsequent decline of the fiscal expansion are chosen to match those used in the experiments reported in Masson et al (1988b).

[13] More detailed shock-minus-control results are presented in the tables in the Appendix. In addition to fiscal shocks for the industrial countries under adaptive and consistent expectations, we also present the results of level shocks to the U.S. target money supply.

the stimulus to output after the first year. The behaviour of the financial variables is quite different over the medium term in the two cases -- the initial 'jumps' in the exchange rate and long-term interest rate are gradually reversed under consistent expectations, whereas there is a growing effect under adaptive expectations. The price level rises by much more under consistent expectations given the forward-looking nature of price and wage setting. The large deviations of prices from the control solution are reflected in a rise in short-term interest rates sufficient to keep the long-run money stock on target. The government deficit associated with the fiscal shock doubles over the six-year horizon as a percent of baseline GDP, rising to 1.5 per cent under consistent expectations and 1.3 per cent under adaptive expectations. The current account deficit grows at the same time, equaling about one-half of the fiscal deficit after six years in both cases.

Figure 3B compares the responses across countries of real output to a domestic government spending shock of the type described above for the U.S. The size of the multiplier depends, as one would expect, both on the size of the country and the openness of the economy. The largest multiplier occurs in response to a fiscal expansion in all of the OECD countries excluding the U.S. (ROECD). The initial-period multiplier is progressively smaller for the U.S., Japan, the European countries, and finally Canada. Output remains above control for somewhat longer in the North American than the overseas economies, reflecting the slower speed of response of current prices to expected future inflation.

The longer-term cycle that is generated by a single-period U.S. fiscal shock is shown in Figure 3C for the adaptive expectations version of the model.[14] (The tax adjustment process has been 'turned-off' in this simulation to better illustrate the properties of the model when subjected to a one-time impulse.) The first-year multiplier is, of course, identical to that shown in the previous shocks. Real output then declines quickly in response to the removal of the fiscal stimulus, as consumption responds to the induced reduction in wealth, while the higher real value of the U.S. dollar lowers the trade balance. Prices continue to rise well after output falls below control due to expectations of higher inflation. After troughing at 0.3 per cent below control in 1991, output converges very gradually over the long-term horizon to the control level. The price level peaks at 0.75 per cent above control after 8 years, but does not fall back to its control level until 25 years into the simulation horizon. The current account balance deteriorates on a shock-minus-control basis throughout the horizon considered here; this is associated with a decline in net foreign assets which stabilizes at one per cent of GDP after about 20 years. The ratio of government debt to GDP increases gradually, reaching 1.5 per cent of GDP on a shock-minus-control basis after 30 years.

Our final set of comparisons shows fiscal multipliers for a larger set

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[14] Very long-run simulation results are not yet available for the consistent expectations version of the model given current data limitations, specifically the end point for the database of 2019. We intend to perform such simulations in future work.

of models. These results are shown in Figure 3D. The years are marked by number rather than by calender year, as the MULTIMOD and INTERMOD experiments start in 1988, while those for the other models start in 1987.[15] Results are reported for fiscal expansions in three individual countries (the United States, Germany and Japan) and for the ROECD, which includes all of the OECD countries excluding the United States. The latter experiment permits consideration of the effects of joint rather than individual fiscal changes, and also permits direct comparison with the experiments run for an earlier Brookings conference, and published in Bryant et al, eds. (1988). INTERMOD is the only model (with the exception of the earlier MINIMOD, Haas and Masson (1986)) with comparable results available for both model-consistent and adaptive expectations. As a majority of the models presented here use adaptive expectations, this is the version of INTERMOD used for these comparisons.

Looking first at the ROECD fiscal expansion, INTERMOD shows a somewhat different multiplier process than that characterized by the average results from the earlier Brookings conference. While the multipliers in both cases average about 1.3 over the first two years of the shock, real GDP in INTERMOD declines almost linearly towards the control level over the next three years whereas the average Brookings multiplier actually rises over the medium term.

A comparison of results for several models of the U.S. indicates that INTERMOD is in the middle of the pack for both the impact and medium-term multipliers. In the case of Germany, INTERMOD's impact multiplier of 1.2 is exceeded only by the EPA model, but then decays more quickly than those of the other four models. INTERMOD produces the largest own-country impact multiplier for Japanese fiscal stimulus, but again the multiplier declines more quickly than those of the other models (with the exception of INTERLINK) such that by the sixth year of the shock, the multiplier is similar to the others (except the EPA model, which shows a sustained increase in the multiplier over the six-year horizon).

4. Simulating INTERMOD

The model outlined in section 2 has been used on an IBM 4381 mainframe as well as in a PC environment. The mainframe-based system is implemented in TROLL which provides an elaborate estimation and simulation system so that model design and development can be conducted efficiently. The PC-TROLL environment, however, provides a relatively limited set of resources which make it an unsuitable simulation system.

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[15] The MULTIMOD results are from the mid-1988 version of the model (Masson et al 1988b). The results from other individual multicountry models are from fiscal policy experiments undertaken for a Federal Reserve Board Conference, as described in more detail in Helliwell, Cockerline and Lafrance (1988). The results marked 'Brookings-ROECD' are for a 1% fiscal expansion, starting in 1985, in the 'Rest of the OECD', i.e. all OECD countries except the United States, with results averaged across eleven multicountry models, as reported in Bryant et al, eds., (1988, Part Two, p. 113).

The PC-based system was therefore developed using an optimizing Fortran compiler to code the model equations as well as the simulation algorithm. The resulting solution times are illustrated in Table 4.1. The algorithm used in the PC system is the Gauss-Seidel technique rather than the Newton technique employed by TROLL.[16]

Table 4.1

Solution times for an eight-year simulation[17]

	IBM PC-AT		IBM 4381
Expectations Scheme.	Adaptive	Consistent	Consistent
Total time.	1.0 min.	120 min.	15-25 min.[18]

The model implemented on the two systems is coded identically, except for one equation. The price of commodities in INTERMOD is set to clear the market in each period. In a Gauss-Seidel simulation the resulting model becomes unstable under any perturbation to the historical solution. This problem was eliminated by rewriting the equation so that the market-clearing price is approached more gradually from iteration to iteration.

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[16] Using Gauss-Seidel allowed us to avoid having to build a parser into the program which kept us within the 640K limit imposed by the PC operating system.

[17] These times are based on U.S. government expenditure increases equal to 1% of GDP for eight years followed by twenty years where the expenditures remain above control but are returning to control by an autoregressive factor of 0.8. In the adaptive expectations scheme, only the initial eight years are simulated. Solution times are much faster when the extent of the proposed policy is reduced, e.g. a six-year shock of 1% of GDP to the German economy with consistent expectations is solved in 45 minutes on an AT machine. Simulation times on machines using an 80386 processor are significnatly faster: the U.S. government spending shock is solved in about 40 minutes on a machine of this class.

[18] This is the range of various performance for the U.S. fiscal expansion. The longer times are during the daytime when other users are on the system, and the shorter times are during the evening hours when system use is light.

Although a number of algorithms have been suggested for solving rational expectations models[19] the Fair-Taylor (1983) extended path technique has been the most generally accepted among modelling teams. The technique overcomes the difficulty of solving a non-linear model in an uncertain world by assuming that agents know the model and use its dynamics in forecasting. This reduces the problem to solving for the non-linearities in the model which is accomplished by simply solving the model forward and allowing it to generate its own forecasts of the expectations variables.

Both implementations of INTERMOD in the rational expectations form are solved utilizing this iterative expectations technique. We will be discussing our implementation of the algorithm but first it will be useful to outline the technique in greater detail. Given an initial set of values for the forward-looking variables, the model is simulated until prescribed convergence criteria are achieved for each period in turn. The iterations required to solve the model for given expectations are referred to as Type I iterations. The time series of results for a Type I solution will provide new values for the variables about which expectations are formed. If these new values differ from the values in the previous Type I solution by more than some predetermined amount, the new values are substituted for expectations variables and the model is simulated through all periods once more. Each new model solution, extending for twenty or more years into the future, is referred to as a Type II iteration. The choice of criterion for Type II convergence is made to achieve sufficient precision of results over the policy horizon without excessive computations relating to expectations of the far-flung future. Our simulations show that once a 1% change between iterations has been achieved for all variables, further refinements do not produce interesting changes in the results.[20]

When a model has satisfied the conditions for Type II convergence, model expectations will be consistent but we may not as yet have the correct solution. The results will be affected by the data assumed for the periods following the end of the simulation horizon, since a forward-looking model will look beyond the last simulation period. The procedure generally used to resolve this problem is to extend the simulation through a sufficient number of periods that the terminal conditions do not significantly affect the results of the period of interest. Studies that have used this extended path technique have generally found that 20 to 25 periods are sufficient to overcome this problem (eg. Taylor 1988, Masson et al 1988b). Since the policy proposal of our simulation was more extensive than that conducted in the other

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[19] The most prominent of these include the saddle point method of Blanchard and Kahn (1980), the multiple shooting method of Lipton et al. (1982), the polynomial matrix factorization method of Hansen and Sargent (1981) and the extended path iterative method based on Fair and Taylor (1983). A brief outline of some of the drawbacks of the various proposals is provided in Fisher, Holly and Hughes Hallett (1985).

[20] Because of the large number of variables in the model, a 1% criterion applied to all variables generally produces convergence to within a few hundredths of 1% for the key variables of interest.

studies we chose to use a 28-year period for the analysis. To ensure that our simulation period was of sufficient duration, we extended the simulation period by varying amounts and tested for changes in the results. This final test is equivalent to a Type III iteration in the Fair-Taylor algorithm.

Implementation of the consistent expectations system on the PC provided an opportunity to optimise this basic form of the Fair-Taylor algorithm. The results of our experimentation show that the algorithm can be modified to yield a significant improvement in simulation time. The experimentation conducted thus far has been focused in two main areas consisting of (1) allowing propagation of expectational effects to occur more quickly and (2) testing alternative convergence criteria for Type II iterations.

The first improvement is a variant of the technique assessed by Fisher, Holly and Hughes Hallett (1985), where it was found that performance might be improved by "stacking" the model equations for all relevant periods and utilizing Gauss-Seidel to solve this extended model. In our generalization of this principle[21] we initially have very loose Type I convergence criteria which are gradually tightened by the program until the final convergence criteria are met.

The second improvement was based on the observation that the effects of the forward solutions on a given period's expectations generally diminish as the horizon is extended. Once a reasonably precise solution for the forward periods is obtained, further refinement of the forward solutions may have insignificant effects on the results relating to the period of primary interest, six years in our case. To exploit this possible source of increased efficiency, we applied the Type II convergence criteria to the results for the first six years only. The results showed that in a percentage shock minus control test, we obtained the completely converged results within hundredths of a decimal point. The combined effect of these two enhancements allow an IBM PC-AT to achieve a solution time that is on a scale equivalent to that of much larger systems, e.g. Taylor (1988).

With these improvements we were able to build a system which can be distributed on a single 3.5" diskette and which performs reasonably well in a PC environment. This will permit international sharing of the use of the model and its database to anyone who has access to a PC system. The details of the structure of the simulator and instructions for its use are outlined in Bagnoli and Kruus (1988).

5. Policy Applications for INTERMOD

Some Possibilities:

-Production of G-7 indicators, including the results of sample policy changes.

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[21] Our procedure reduces to the "stacking" equivalent in the special case where the type I convergence criteria are set so loose that they are satisfied on the first iteration.

This use of the INTERMOD framework might help to inform subsequent stages in the development of international policy discussions, since a clear understanding of the linkages between policies and indicators, both at home and abroad, is a first step towards establishing indicator values that might indicate the usefulness of further discussions or policy changes.

-Further analysis of the roles of fiscal policies and exchange rate changes in influencing current account imbalances.

-Effects of industrial country demand shocks on commodity prices, and vice versa. In INTERMOD, non-oil commodity prices are less sticky than other prices, and thus respond first to any increase in demand relative to productive capacity. Supply-induced changes in raw materials prices are also followed by changes in final demand prices in the industrial countries, although the lines of causation are very different. The effects of oil price increases are also very different from the effects of increases in non-oil commodity prices. Masson et al (1988a) show that oil price increases are stagflationary for all the oil-importing regions in MULTIMOD. Increases in commodity prices also cause import-price inflation in the industrial countries in MULTIMOD, but real output is much less adversely affected in these countries than in the case of an oil price increase. This happens for two main reasons. The most important reason is that higher commodity revenues raise the estimated debt-servicing capacity of developing countries, which triggers new lending and investment by those countries, so that the real net imports of the developing countries are increased, thus providing an increase in the real net exports of the industrial countries. By contrast, the high-income oil producers are assumed to spend little of the incremental revenues. The second reason is that the estimated price elasticities of import demand for commodities exceed those for crude oil in MULTIMOD, and cause real demand in the industrial countries to be shifted more toward domestic output.

-Modelling monetary and exchange rate policies, including EMS commitments for France and Italy, and shadowing the DM for the UK. At the moment, each of the national monetary authorities is presumed to have a target money stock which they depart from only to avoid the possibly disequilibrating effects of lagged responses in money demand. This procedure is useful in providing a framework for assessing model properties, but now needs comparison with some more realistic alternatives. As a first step towards greater realism, it would be fairly easy to substitute some form of DM exchange rate target for money growth rules in France, Italy, and possibly the United Kingdom and the group of 11 smaller industrial countries, many of which are either in or influenced by the EMS. More ambitiously, different types of monetary policy rules, with greater or lesser emphasis on exchange rate stability, could be assessed in terms of the way they influence the domestic and international effects of various disturbances or policy changes.

6. Plans for Further Development

Some possibilities:

-Introducing more implications of globalization, including international cost

considerations influencing investment and output, as well as output prices.

-Application of forward-looking expectations to a wider range of variables, including investment.

-Testing alternative treatments of consumption, including application of consistent expectations to the wealth calculations, and testing alternatives to the maintained hypothesis of Ricardian equivalence.

-Separating government consumption and investment expenditures more clearly, with government investment entering the capital stock explicitly.

-Developing and testing models of learning behaviour that combine explicit account of forward values with less than perfect certainty about the structure of the underlying model(s).

-More systematic tests of the nature and size of international differences in key parameters, such as those indicating the speed with which the economy adjusts to changes in circumstances, and the extent to which they are subject to inflationary pressures.

-Developing the supply side of the model, with consequent endogenous treatment of inventory accumulation (as the difference between endogenous supply and final demand), mutually consistent investment and employment demands, labour supply, wage determination, and unemployment.

-Comparing the properties of national blocks with relevant national models and with other multicountry models.

-Further development of North-South linkages, especially the testing of alternative mechanisms for determining the links between commodity prices and investment in commodity production capacity. A related question is whether the current version relies too much on assessments of debt-servicing capacity as the criterion for new lending to the developing countries, and hence leads to excessive investment in new capacity, and too little reduction in debt burdens, when commodity prices rise.

Despite the length of the list of projects for future model development and testing, our assessment of the model as it stands is that it already provides a useful tool for analyzing international linkages and for assessing the nature and consequences of international differences in economic structure. Compared to most other models, INTERMOD and MULTIMOD are relatively easy to understand and to use, and thus provide a suitable basis for international discussions, and for testing alternative theories and approaches. Most of our suggestions for future development are designed with such uses in mind.

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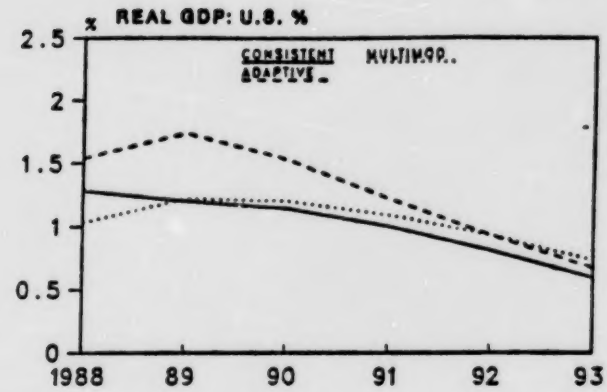
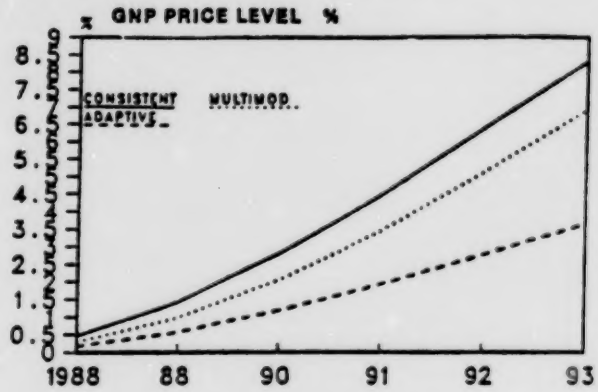
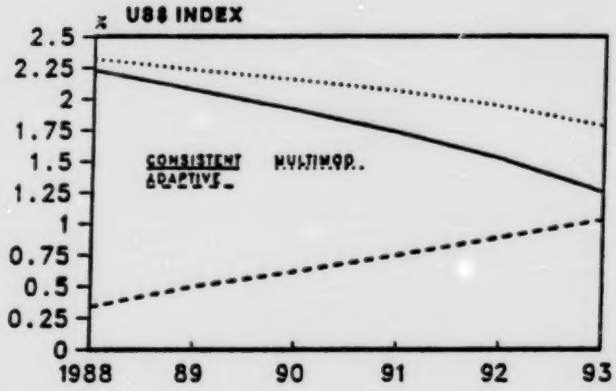
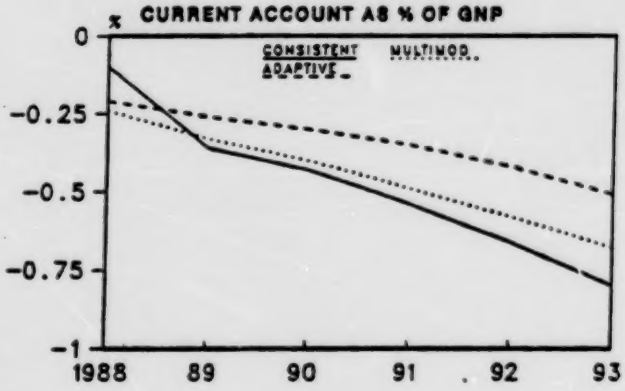
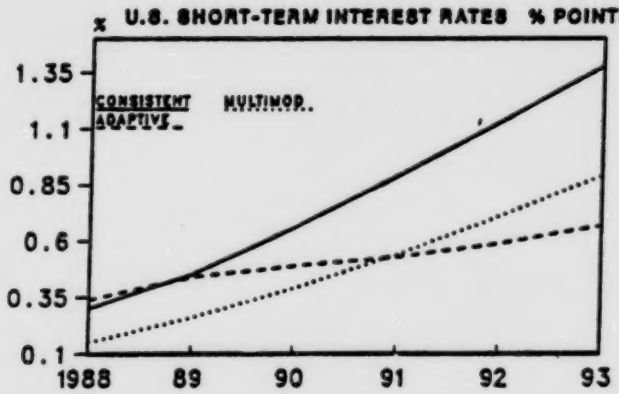
FIG. 3A: U.S. FISCAL: EFFECTS OF EXPECTATIONS

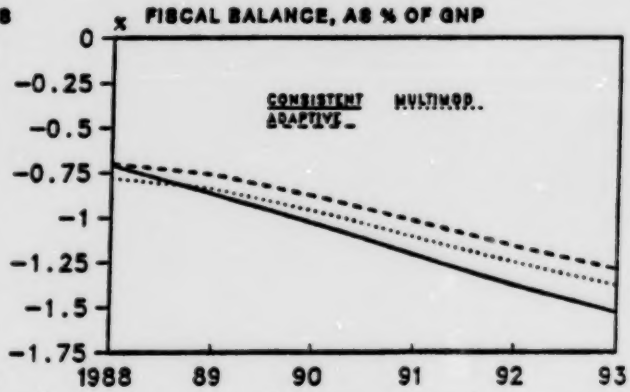


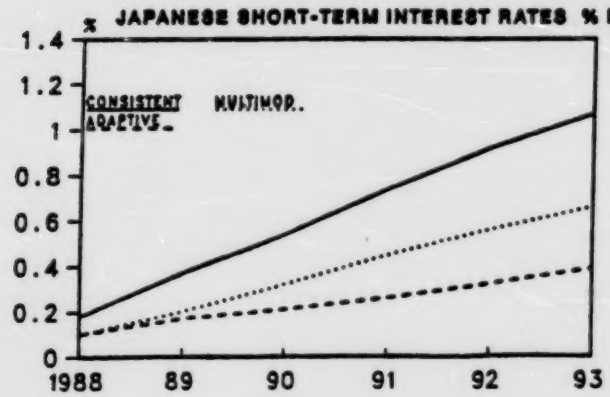












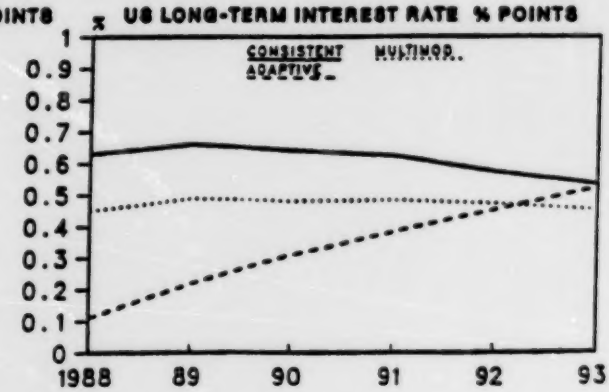
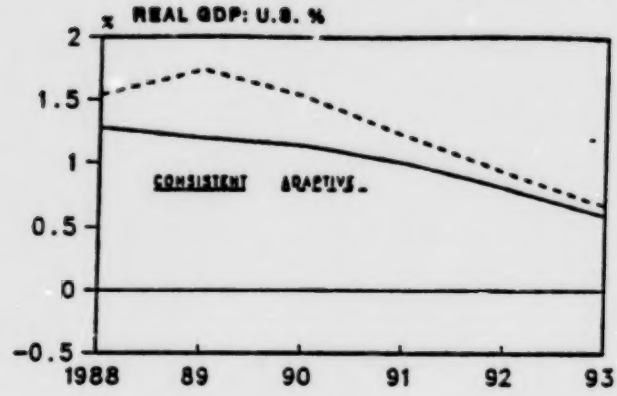
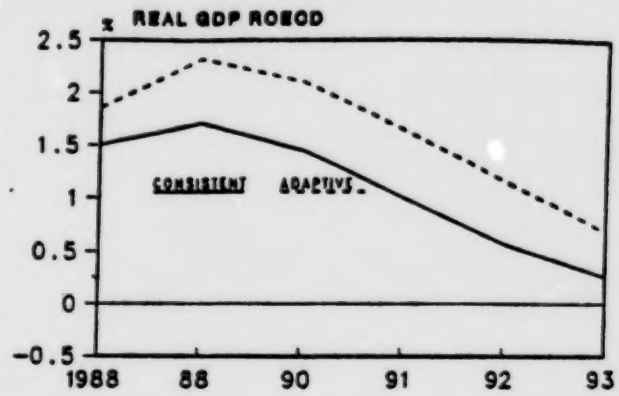
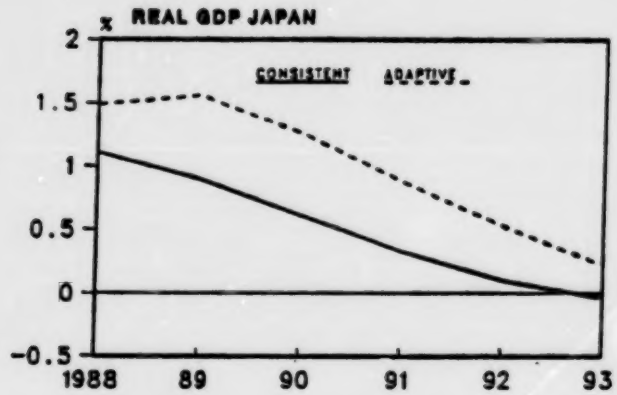
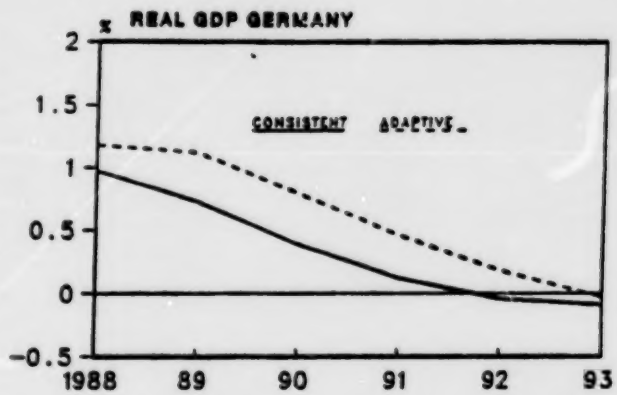


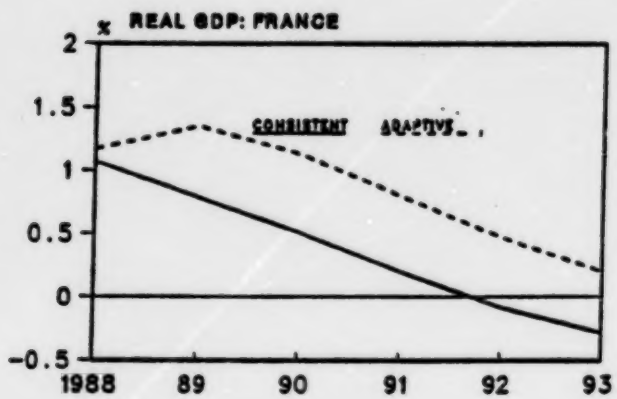
FIG. 3B: OWN COUNTRY FISCAL MULTIPLIERS

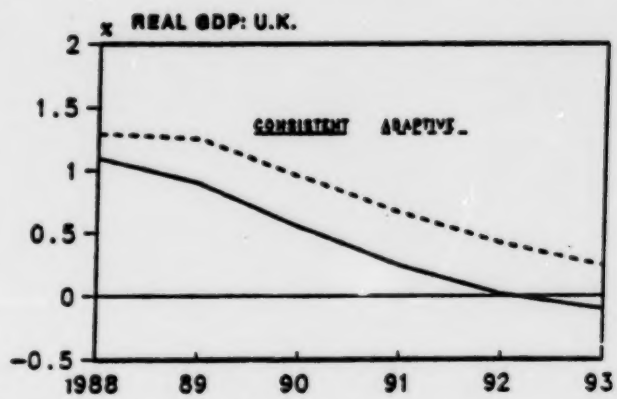


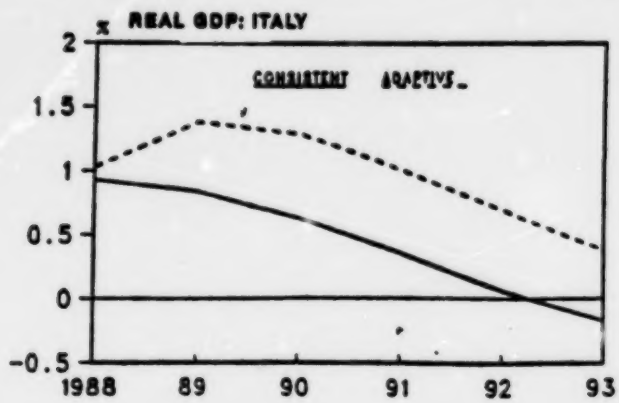












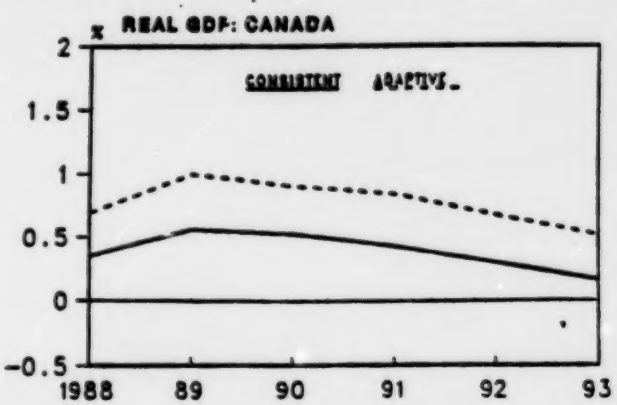


FIG. 3C: LONG-TERM CYCLE, ADAPTIVE EXPECTATIONS

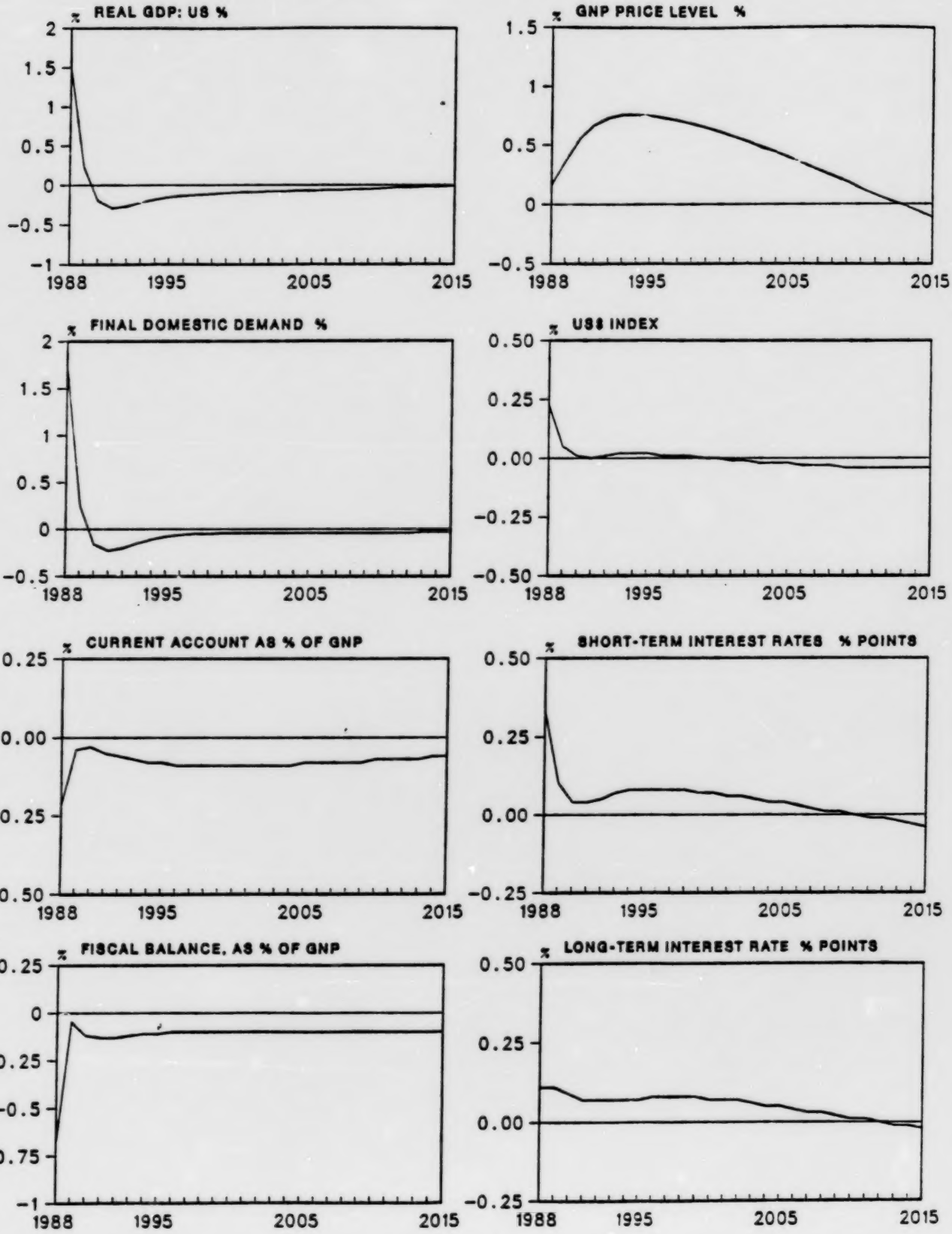
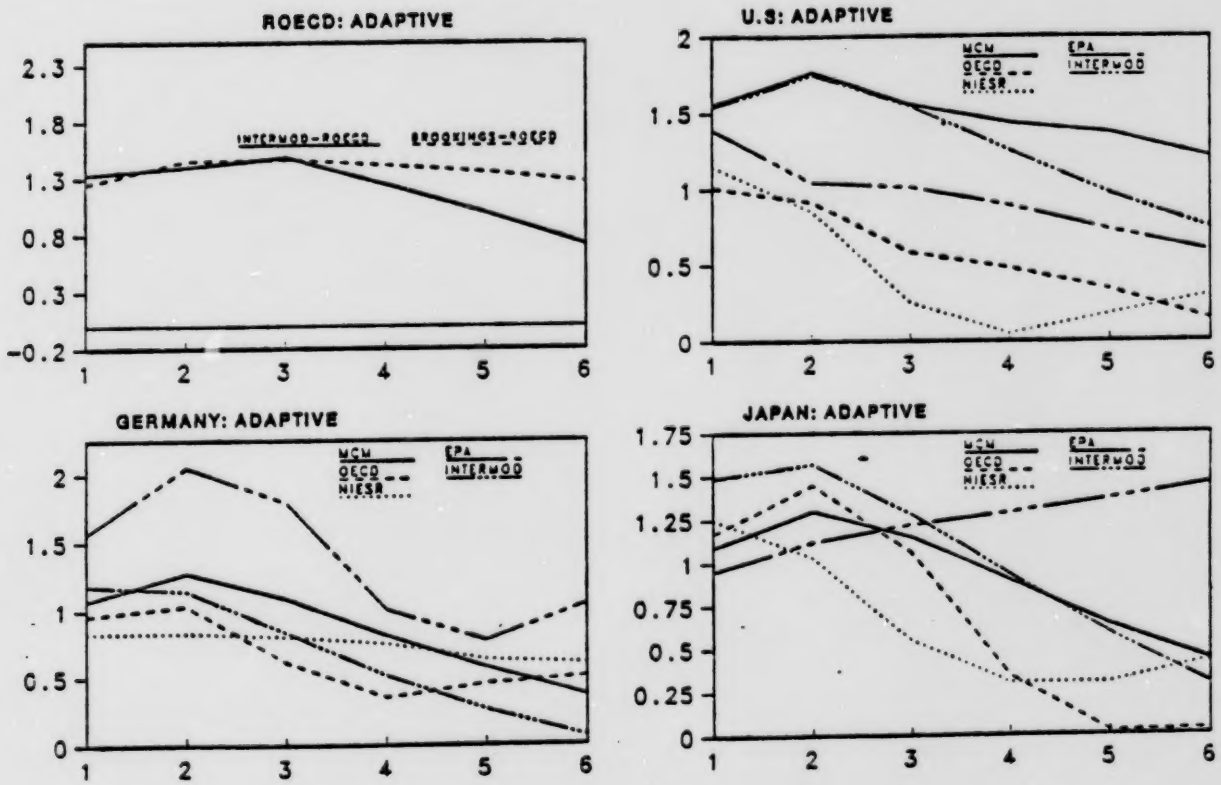


FIG. 3D: FISCAL MULTIPLIERS IN DIFFERENT MODELS



INTERMOD 1.1: A G-7 Version of the IMF's MULTIMOD: Appendix

Description of Shocks:

Fiscal Shock: Increase in real government expenditures by 1% of baseline real GDP from 1988 to 1995 declining by 0.8 times its previous value in each subsequent year. The endogenous tax response is assumed to start only in 1996.

Money Shock: Permanent increase in the target money stock of 1% starting in 1988.

Shock-Minus-Control Results:

Consistent Expectations:

Table A1: U.S. Fiscal Shock
Table A1A: U.S. Monetary Shock
Table A2: ROECD Fiscal Shock
Table A3: Japanese Fiscal Shock
Table A4: German Fiscal Shock
Table A5: French Fiscal Shock
Table A6: U.K. Fiscal Shock
Table A7: Italian Fiscal Shock
Table A8: Canadian Fiscal Shock
Table A9: Small Industrial Fiscal Shock

Adaptive Expectations:

Table A10: U.S. Fiscal Shock
Table A10A: U.S. Monetary Shock
Table A12: ROECD Fiscal Shock
Table A13: Japanese Fiscal Shock
Table A14: German Fiscal Shock
Table A15: French Fiscal Shock
Table A16: U.K. Fiscal Shock
Table A17: Italian Fiscal Shock
Table A18: Canadian Fiscal Shock
Table A19: Small Industrial Fiscal Shock

Equation Listing for the US and ROW blocks

Parameter Values

Table 2.1 : Consumption Equation Estimates

Table 2.2 : Export Price Equation Estimates

Table 2.3 : Export Volume Equation Estimates

Table 2.4 : Import Volume Equation Estimates

Table 2.5 : Oil Consumption Equation Estimates

Table 2.6 : Commodity Imports Equation Estimates

Table 2.7 : Non-Oil GNP Price Deflator Equation Estimates

Table 2.8 : Money Demand Equation Estimates

TABLE A1: US FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	1.24	0.21	0.08	-0.06	0.06	-0.04	0.27	0.59
REAL GNP	1.29	0.23	0.09	-0.06	0.08	-0.05	0.27	0.60
REAL ABSORPTION	1.58	0.01	-0.04	-0.17	-0.08	-0.18	-0.08	0.65
CAPITAL STOCK	0.08	0.00	-0.01	-0.03	-0.01	-0.03	-0.02	0.02
GDP DEFLATOR	0.45	0.32	0.36	0.14	0.30	0.20	0.12	0.33
ABSORPTION INFLATION (% PT)	0.18	0.43	0.42	0.23	0.39	0.34	0.29	0.00
SHORT-TERM INTEREST RATE (% PT)	0.30	0.12	0.09	0.03	0.08	0.05	0.11	0.17
LONG-TERM INTEREST RATE (% PT)	0.63	0.32	0.31	0.39	0.41	0.39	0.60	0.48
EXCHANGE RATE ($/LOCAL UNIT)*	2.02	-1.89	-2.50	2.80	-2.36	-2.76	-0.24	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.72	-0.09	-0.06	0.02	-0.02	-0.01	-0.03	-0.21
NET FOREIGN ASSETS	-0.14	0.34	0.33	0.03	0.41	-0.09	0.12	-0.03
FOREIGN SAVING**	0.14	-0.13	-0.10	-0.03	-0.08	0.00	-0.19	0.03
+ GEN. GOVERNMENT BALANCE	-0.73	0.05	0.02	-0.03	0.01	-0.03	0.02	-0.24
+ PRIVATE SAVING	0.77	0.21	0.14	0.04	0.11	0.04	0.20	-0.01
= INVESTMENT	0.18	0.14	0.06	-0.03	0.04	0.01	0.02	-0.22
90								
REAL GDP	1.12	0.46	0.40	0.48	0.39	0.37	0.65	0.74
REAL GNP	1.09	0.54	0.48	0.49	0.46	0.35	0.60	0.75
REAL ABSORPTION	1.63	0.27	0.26	0.21	0.21	0.12	0.26	0.84
CAPITAL STOCK	0.34	0.08	0.06	0.02	0.04	-0.00	0.06	0.15
GDP DEFLATOR	2.74	1.81	1.80	1.07	1.66	1.28	1.23	2.00
ABSORPTION INFLATION (% PT)	1.31	0.83	0.78	0.61	0.81	0.70	0.75	0.01
SHORT-TERM INTEREST RATE (% PT)	0.64	0.44	0.42	0.31	0.40	0.33	0.36	0.49
LONG-TERM INTEREST RATE (% PT)	0.66	0.31	0.30	0.37	0.43	0.42	0.64	0.49
EXCHANGE RATE ($/LOCAL UNIT)*	1.64	-1.56	-2.12	-2.30	-1.94	-2.27	0.16	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	2.39	-0.49	-0.40	-0.01	-0.26	0.04	-0.08	0.40
NET FOREIGN ASSETS	-0.91	0.69	0.67	0.26	0.62	0.05	0.64	-0.16
FOREIGN SAVING**	0.44	-0.28	-0.31	-0.14	-0.16	-0.05	-0.20	0.07
+ GEN. GOVERNMENT BALANCE	-1.03	0.19	0.15	-0.01	0.12	-0.13	-0.01	-0.33
+ PRIVATE SAVING	1.29	0.84	0.64	0.52	0.48	0.60	0.71	0.61
= INVESTMENT	0.70	0.74	0.48	0.36	0.45	0.42	0.50	0.35
93								
REAL GDP	0.52	0.23	0.26	0.39	0.24	0.36	0.73	0.40
REAL GNP	0.36	0.41	0.46	0.43	0.33	0.34	0.67	0.39
REAL ABSORPTION	1.31	0.16	0.19	0.21	0.12	0.18	0.33	0.67
CAPITAL STOCK	0.47	0.16	0.14	0.18	0.12	0.12	0.25	0.27
GDP DEFLATOR	8.06	4.73	4.18	3.88	4.43	4.10	4.97	5.85
ABSORPTION INFLATION (% PT)	1.68	0.89	0.68	1.00	0.84	0.94	1.43	0.01
SHORT-TERM INTEREST RATE (% PT)	1.32	0.90	0.81	0.77	0.83	0.80	1.02	1.04
LONG-TERM INTEREST RATE (% PT)	0.57	0.24	0.22	0.31	0.35	0.36	0.62	0.42
EXCHANGE RATE ($/LOCAL UNIT)*	0.86	-0.84	-1.32	-1.39	-1.15	-1.39	0.98	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	5.71	-1.40	-0.99	0.15	-0.75	0.65	0.10	1.67
NET FOREIGN ASSETS	-2.70	1.51	1.68	0.68	0.91	0.19	1.26	-0.45
FOREIGN SAVING**	0.82	-0.44	-0.56	-0.18	-0.16	-0.04	-0.16	0.14
+ GEN. GOVERNMENT BALANCE	-1.54	0.32	0.19	-0.15	0.16	-0.40	-0.14	-0.55
+ PRIVATE SAVING	2.10	1.76	1.26	1.28	0.92	1.56	1.83	1.61
= INVESTMENT	1.37	1.63	0.88	0.95	0.92	1.12	1.53	1.20

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A1A: US MONETARY SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.07	-0.01	0.01	0.03	0.01	0.03	-0.04	0.03
REAL GNP	0.08	-0.02	0.00	0.03	0.00	0.03	-0.02	0.03
REAL ABSORPTION	0.02	-0.00	0.01	0.02	0.01	0.02	0.03	0.02
CAPITAL STOCK	0.01	-0.00	0.00	0.00	0.00	0.00	-0.00	0.00
GDP DEFLATOR	0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.01
ABSORPTION INFLATION (% PT)	0.10	-0.03	-0.01	-0.00	-0.02	-0.01	-0.13	0.00
SHORT-TERM INTEREST RATE (% PT)	-0.14	-0.01	-0.00	0.01	-0.00	0.00	-0.03	-0.06
LONG-TERM INTEREST RATE (% PT)	-0.06	-0.00	-0.00	0.00	-0.00	0.00	-0.01	-0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.78	0.76	0.82	0.84	0.80	0.84	0.72	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	0.00	-0.00	-0.01	-0.00	-0.01	-0.02	0.16
NET FOREIGN ASSETS	-0.04	-0.08	-0.07	0.02	-0.10	0.05	0.30	0.01
FOREIGN SAVING**	0.04	-0.00	-0.01	-0.02	-0.01	-0.02	-0.08	-0.01
+ GEN. GOVERNMENT BALANCE	-0.00	-0.00	0.00	0.01	0.00	0.01	0.02	-0.01
+ PRIVATE SAVING	0.01	-0.01	0.00	0.01	0.01	0.02	0.02	0.15
= INVESTMENT	0.04	-0.01	-0.00	0.01	-0.00	0.00	-0.04	0.13
90								
REAL GDP	0.20	-0.05	-0.03	-0.02	-0.03	-0.02	-0.14	0.06
REAL GNP	0.21	-0.07	-0.05	-0.02	-0.04	-0.01	-0.10	0.06
REAL ABSORPTION	0.13	-0.04	-0.03	-0.01	-0.03	-0.01	-0.08	0.04
CAPITAL STOCK	0.06	-0.01	-0.01	-0.00	-0.01	0.00	-0.04	0.02
GDP DEFLATOR	0.17	-0.04	-0.01	0.01	0.00	0.01	-0.04	0.07
ABSORPTION INFLATION (% PT)	0.08	-0.01	-0.00	0.00	0.00	0.01	0.01	0.00
SHORT-TERM INTEREST RATE (% PT)	-0.10	-0.02	-0.01	-0.00	-0.01	-0.00	-0.03	-0.05
LONG-TERM INTEREST RATE (% PT)	-0.05	-0.00	-0.00	0.00	-0.00	0.00	-0.01	-0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.69	0.67	0.71	0.73	0.70	0.74	0.66	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.08	0.02	0.01	-0.00	0.01	0.00	-0.02	0.12
NET FOREIGN ASSETS	0.04	-0.08	-0.04	0.02	-0.10	0.05	0.29	0.04
FOREIGN SAVING**	-0.03	0.02	0.01	-0.00	0.01	-0.01	-0.03	-0.02
+ GEN. GOVERNMENT BALANCE	0.01	-0.00	-0.01	-0.00	-0.01	-0.00	0.01	-0.01
+ PRIVATE SAVING	0.12	-0.05	-0.02	-0.00	-0.02	0.01	-0.06	0.16
= INVESTMENT	0.10	-0.03	-0.02	-0.01	-0.01	-0.01	-0.08	0.13
93								
REAL GDP	0.08	0.03	0.02	0.00	0.01	-0.00	0.03	0.04
REAL GNP	0.10	0.01	0.00	0.01	0.00	0.00	0.06	0.05
REAL ABSORPTION	0.07	0.01	0.01	0.00	0.01	0.00	0.03	0.03
CAPITAL STOCK	0.10	-0.01	-0.01	-0.00	-0.01	-0.01	-0.04	0.03
GDP DEFLATOR	0.55	-0.04	0.01	-0.00	0.01	0.02	-0.12	0.22
ABSORPTION INFLATION (% PT)	0.11	0.02	0.01	0.00	0.01	0.01	-0.00	0.00
SHORT-TERM INTEREST RATE (% PT)	0.06	-0.00	0.00	0.00	0.00	0.00	-0.01	-0.03
LONG-TERM INTEREST RATE (% PT)	0.04	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
EXCHANGE RATE ($/LOCAL UNIT)*	-0.65	0.63	0.65	0.66	0.64	0.66	0.68	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.03	0.01	0.00	-0.00	0.00	0.00	-0.05	0.12
NET FOREIGN ASSETS	0.11	-0.07	-0.01	0.05	-0.09	0.07	0.34	0.08
FOREIGN SAVING**	-0.02	0.01	0.01	-0.01	0.00	-0.01	-0.02	-0.01
+ GEN. GOVERNMENT BALANCE	-0.04	0.01	0.01	0.00	0.00	-0.00	0.02	-0.02
+ PRIVATE SAVING	0.18	-0.02	-0.00	0.00	-0.00	0.01	-0.01	0.18
= INVESTMENT	0.12	-0.01	0.01	-0.00	0.01	0.00	-0.02	0.15

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A2: ROECD FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.27	1.64	1.93	1.65	1.82	1.46	0.84	1.06
REAL GNP	0.28	1.61	1.90	1.65	1.77	1.47	0.89	1.06
REAL ABSORPTION	-0.09	1.84	2.10	1.73	1.97	1.55	1.41	0.99
CAPITAL STOCK	-0.01	0.11	0.15	0.09	0.13	0.08	0.03	0.07
GDP DEFLATOR	0.29	0.91	1.28	0.77	1.12	0.90	0.41	0.68
ABSORPTION INFLATION (% PT)	0.60	0.79	1.05	0.69	0.85	0.83	0.05	0.01
SHORT-TERM INTEREST RATE (% PT)	0.16	0.47	0.58	0.46	0.51	0.45	0.20	0.34
LONG-TERM INTEREST RATE (% PT)	0.56	0.54	0.61	0.94	0.86	0.95	0.73	0.66
EXCHANGE RATE ($/LOCAL UNIT)*	-1.83	1.81	2.30	2.68	2.47	2.57	1.26	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	0.51	0.30	0.63	0.46	0.56	0.79	0.77
NET FOREIGN ASSETS	0.05	-0.21	-0.01	0.02	-0.27	0.09	0.21	0.07
FOREIGN SAVING**	-0.05	0.02	-0.20	-0.02	-0.06	-0.01	0.18	-0.07
+ GEN. GOVERNMENT BALANCE	-0.02	-0.58	-0.39	-0.66	-0.49	-0.67	-0.79	-0.40
+ PRIVATE SAVING	0.16	1.07	1.19	1.06	1.05	1.07	0.70	1.13
= INVESTMENT	0.09	0.51	0.61	0.38	0.50	0.39	0.08	0.66
90								
REAL GDP	1.02	1.41	1.35	1.79	1.45	1.76	1.20	1.29
REAL GNP	1.05	1.40	1.36	1.78	1.41	1.76	1.16	1.30
REAL ABSORPTION	0.44	1.99	2.05	2.09	1.99	2.07	1.75	1.33
CAPITAL STOCK	0.16	0.50	0.57	0.52	0.54	0.48	0.25	0.38
GDP DEFLATOR	1.94	4.71	5.71	4.73	5.61	5.33	2.53	3.75
ABSORPTION INFLATION (% PT)	1.00	1.96	2.17	2.28	2.41	2.52	1.33	0.02
SHORT-TERM INTEREST RATE (% PT)	0.60	1.05	1.18	1.16	1.18	1.25	0.64	0.90
LONG-TERM INTEREST RATE (% PT)	0.61	0.50	0.56	0.84	0.85	0.97	0.76	0.66
EXCHANGE RATE ($/LOCAL UNIT)*	-1.30	1.19	1.49	2.18	1.82	2.09	1.21	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.10	1.21	0.86	2.17	1.33	2.11	2.52	1.25
NET FOREIGN ASSETS	0.41	-0.18	0.37	-0.25	-0.65	-0.13	-0.51	0.14
FOREIGN SAVING**	-0.17	0.06	-0.12	0.16	0.29	0.12	0.40	-0.03
+ GEN. GOVERNMENT BALANCE	-0.01	-0.51	-0.51	-1.02	-0.60	-1.27	-1.05	-0.48
+ PRIVATE SAVING	0.80	2.42	2.24	2.43	1.90	2.97	1.61	2.09
= INVESTMENT	0.62	1.96	1.61	1.57	1.59	1.83	0.96	1.58
93								
REAL GDP	0.74	0.17	0.23	0.10	0.06	0.19	0.53	0.42
REAL GNP	0.76	0.18	0.32	0.05	-0.02	0.16	0.36	0.42
REAL ABSORPTION	0.38	1.10	1.05	0.97	0.90	1.09	1.28	0.76
CAPITAL STOCK	0.42	0.52	0.54	0.60	0.51	0.57	0.41	0.49
GDP DEFLATOR	6.37	9.95	10.36	12.57	11.95	13.47	8.02	9.34
ABSORPTION INFLATION (% PT)	1.40	1.23	0.98	2.13	1.48	2.07	1.86	0.01
SHORT-TERM INTEREST RATE (% PT)	1.23	1.62	1.71	2.02	1.87	2.15	1.38	1.56
LONG-TERM INTEREST RATE (% PT)	0.53	0.34	0.37	0.60	0.62	0.68	0.69	0.51
EXCHANGE RATE ($/LOCAL UNIT)*	0.01	-0.04	-0.08	0.27	0.17	0.03	1.05	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.11	2.38	2.68	6.24	3.49	6.90	6.07	2.46
NET FOREIGN ASSETS	0.62	-0.11	1.44	-1.09	-1.65	-0.96	2.19	0.01
FOREIGN SAVING**	-0.06	0.07	-0.34	0.42	0.49	0.34	0.72	0.08
+ GEN. GOVERNMENT BALANCE	-0.18	-0.63	-0.86	-1.91	-1.02	-2.43	-1.66	-0.80
+ PRIVATE SAVING	1.51	3.72	3.05	3.97	2.58	5.13	3.02	2.91
= INVESTMENT	1.28	3.15	1.86	2.47	2.05	3.05	2.09	2.19

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A3: JA FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.04	1.18	0.08	0.02	0.06	0.02	0.07	0.25
REAL GNP	0.05	1.16	0.08	0.02	0.06	0.02	0.08	0.25
REAL ABSORPTION	-0.03	1.68	0.00	-0.05	-0.02	-0.05	-0.01	0.27
CAPITAL STOCK	-0.01	0.09	-0.00	-0.01	-0.00	-0.01	-0.01	0.01
GDP DEFLATOR	0.07	0.45	0.16	0.07	0.13	0.09	0.06	0.13
ABSORPTION INFLATION (% PT)	0.12	0.25	0.19	0.10	0.17	0.14	0.06	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.29	0.05	0.02	0.04	0.03	0.03	0.07
LONG-TERM INTEREST RATE (% PT)	0.17	0.23	0.14	0.18	0.18	0.18	0.19	0.18
EXCHANGE RATE ($/LOCAL UNIT)*	-0.26	1.68	-0.16	-0.25	-0.16	-0.25	0.11	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	0.67	-0.03	-0.00	-0.02	-0.01	-0.02	0.23
NET FOREIGN ASSETS	0.03	-0.43	0.07	0.04	0.07	0.02	0.13	-0.02
FOREIGN SAVING**	-0.03	0.25	-0.06	-0.04	-0.04	-0.03	-0.09	0.02
+ GEN. GOVERNMENT BALANCE	-0.00	-0.69	0.02	-0.00	0.01	-0.00	0.02	-0.17
+ PRIVATE SAVING	0.04	0.71	0.08	0.04	0.06	0.04	0.08	0.35
= INVESTMENT	0.01	0.28	0.04	-0.00	0.02	0.01	-0.00	0.20
90								
REAL GDP	0.22	0.75	0.21	0.22	0.19	0.18	0.18	0.31
REAL GNP	0.23	0.70	0.23	0.23	0.21	0.19	0.18	0.31
REAL ABSORPTION	0.09	1.60	0.13	0.11	0.10	0.07	0.07	0.36
CAPITAL STOCK	0.02	0.33	0.04	0.02	0.03	0.01	0.01	0.08
GDP DEFLATOR	0.45	2.33	0.76	0.48	0.68	0.56	0.39	0.75
ABSORPTION INFLATION (% PT)	0.24	0.94	0.32	0.26	0.32	0.29	0.22	0.00
SHORT-TERM INTEREST RATE (% PT)	0.14	0.48	0.18	0.14	0.17	0.15	0.11	0.20
LONG-TERM INTEREST RATE (% PT)	0.19	0.22	0.15	0.18	0.19	0.20	0.20	0.19
EXCHANGE RATE ($/LOCAL UNIT)*	-0.09	1.10	-0.24	-0.29	-0.21	-0.30	0.13	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	1.89	-0.19	-0.03	-0.12	0.00	-0.04	0.47
NET FOREIGN ASSETS	0.12	-0.98	0.32	0.20	0.20	0.11	0.29	-0.07
FOREIGN SAVING**	-0.05	0.39	-0.15	-0.09	-0.07	-0.05	-0.09	0.03
+ GEN. GOVERNMENT BALANCE	-0.01	-0.75	0.07	0.00	0.05	-0.05	0.00	-0.18
+ PRIVATE SAVING	0.19	1.29	0.29	0.25	0.21	0.29	0.23	0.58
= INVESTMENT	0.13	0.93	0.22	0.16	0.19	0.18	0.14	0.43
93								
REAL GDP	0.19	-0.01	0.10	0.12	0.08	0.13	0.17	0.12
REAL GNP	0.19	-0.13	0.17	0.15	0.11	0.14	0.16	0.11
REAL ABSORPTION	0.09	1.00	0.06	0.06	0.03	0.07	0.07	0.24
CAPITAL STOCK	0.08	0.29	0.07	0.07	0.06	0.05	0.05	0.11
GDP DEFLATOR	1.49	4.57	1.61	1.57	1.65	1.64	1.37	1.90
ABSORPTION INFLATION (% PT)	0.34	0.48	0.22	0.37	0.27	0.34	0.37	0.00
SHORT-TERM INTEREST RATE (% PT)	0.30	0.67	0.31	0.31	0.31	0.32	0.28	0.36
LONG-TERM INTEREST RATE (% PT)	0.17	0.15	0.12	0.16	0.16	0.18	0.19	0.16
EXCHANGE RATE ($/LOCAL UNIT)*	0.19	0.07	-0.34	-0.36	-0.30	-0.39	0.20	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.05	3.90	-0.42	0.04	-0.30	0.28	0.01	0.93
NET FOREIGN ASSETS	0.19	-1.87	0.86	0.45	0.38	0.24	0.48	-0.22
FOREIGN SAVING**	-0.02	0.46	-0.23	-0.10	-0.07	-0.05	-0.07	0.07
+ GEN. GOVERNMENT BALANCE	-0.05	-0.91	0.07	-0.06	0.06	-0.17	-0.04	-0.26
+ PRIVATE SAVING	0.36	1.76	0.49	0.52	0.35	0.65	0.50	0.77
= INVESTMENT	0.30	1.32	0.33	0.36	0.33	0.43	0.40	0.58

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A4: GR FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.05	0.11	0.95	0.13	0.19	0.13	0.09	0.19
REAL GNP	0.05	0.11	0.93	0.12	0.19	0.13	0.10	0.19
REAL ABSORPTION	-0.00	0.05	1.64	0.04	0.09	0.04	0.04	0.20
CAPITAL STOCK	0.00	0.01	0.08	0.01	0.01	0.01	0.01	0.02
GDP DEFLATOR	0.04	0.08	0.36	0.08	0.13	0.10	0.06	0.10
ABSORPTION INFLATION (% PT)	0.10	0.10	0.11	0.13	0.17	0.16	0.08	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.04	0.21	0.05	0.07	0.05	0.03	0.06
LONG-TERM INTEREST RATE (% PT)	0.04	0.03	0.10	0.08	0.07	0.08	0.04	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.43	0.11	1.27	0.48	0.42	0.47	-0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.03	0.65	-0.02	-0.05	-0.04	-0.02	0.14
NET FOREIGN ASSETS	-0.01	0.04	-0.49	0.04	0.00	0.06	0.04	-0.01
FOREIGN SAVING**	0.01	-0.05	0.38	-0.04	-0.06	-0.05	-0.04	0.01
* GEN. GOVERNMENT BALANCE	-0.00	0.02	-0.66	0.01	0.04	0.02	0.02	-0.07
* PRIVATE SAVING	0.02	0.07	0.53	0.07	0.09	0.09	0.06	0.18
= INVESTMENT	0.02	0.05	0.24	0.04	0.07	0.06	0.04	0.12
90								
REAL GDP	0.18	0.16	0.42	0.24	0.20	0.21	0.12	0.21
REAL GNP	0.19	0.17	0.34	0.25	0.20	0.22	0.12	0.21
REAL ABSORPTION	0.09	0.10	1.40	0.14	0.12	0.11	0.05	0.24
CAPITAL STOCK	0.04	0.05	0.25	0.06	0.07	0.06	0.03	0.08
GDP DEFLATOR	0.27	0.42	1.52	0.51	0.62	0.55	0.30	0.51
ABSORPTION INFLATION (% PT)	0.13	0.19	0.54	0.25	0.27	0.27	0.15	0.00
SHORT-TERM INTEREST RATE (% PT)	0.09	0.11	0.27	0.15	0.16	0.15	0.09	0.13
LONG-TERM INTEREST RATE (% PT)	0.05	0.04	0.09	0.09	0.08	0.10	0.06	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.37	0.10	0.94	0.51	0.38	0.48	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.03	-0.15	2.08	-0.07	-0.17	-0.06	-0.03	0.24
NET FOREIGN ASSETS	0.04	0.16	-1.44	0.18	0.11	0.16	0.07	-0.04
FOREIGN SAVING**	-0.02	-0.07	0.57	-0.07	-0.04	-0.05	-0.01	0.02
* GEN. GOVERNMENT BALANCE	0.01	0.05	-0.84	0.01	0.06	-0.02	-0.00	-0.08
* PRIVATE SAVING	0.12	0.22	0.70	0.25	0.19	0.29	0.14	0.31
= INVESTMENT	0.10	0.20	0.42	0.20	0.20	0.22	0.13	0.24
93								
REAL GDP	0.09	0.01	-0.04	-0.01	-0.01	0.02	0.05	0.04
REAL GNP	0.10	0.04	-0.21	0.01	0.01	0.03	0.04	0.03
REAL ABSORPTION	0.04	0.00	0.93	-0.03	-0.04	-0.01	-0.00	0.11
CAPITAL STOCK	0.07	0.06	0.18	0.07	0.06	0.06	0.04	0.08
GDP DEFLATOR	0.82	0.95	2.48	1.29	1.21	1.29	0.82	1.15
ABSORPTION INFLATION (% PT)	0.17	0.14	0.20	0.21	0.13	0.19	0.17	0.00
SHORT-TERM INTEREST RATE (% PT)	0.16	0.17	0.32	0.23	0.21	0.23	0.16	0.20
LONG-TERM INTEREST RATE (% PT)	0.06	0.04	0.06	0.08	0.08	0.09	0.07	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.14	0.02	0.30	0.27	0.16	0.21	0.05	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.32	4.61	0.04	-0.26	0.15	0.04	0.45
NET FOREIGN ASSETS	0.08	0.36	-2.78	0.32	0.22	0.23	0.05	-0.11
FOREIGN SAVING**	-0.01	-0.08	0.62	-0.05	-0.04	-0.03	0.01	0.03
* GEN. GOVERNMENT BALANCE	-0.02	0.06	-1.07	-0.07	0.03	-0.12	-0.04	-0.13
* PRIVATE SAVING	0.19	0.34	0.79	0.37	0.22	0.46	0.25	0.36
= INVESTMENT	0.16	0.32	0.34	0.26	0.21	0.31	0.23	0.27

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A5: FR FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.02	0.05	0.15	1.08	0.10	0.09	0.04	0.15
REAL GNP	0.02	0.05	0.14	1.06	0.10	0.09	0.04	0.15
REAL ABSORPTION	-0.02	0.02	0.08	1.63	0.04	0.02	0.01	0.16
CAPITAL STOCK	-0.00	0.00	0.01	0.08	0.01	0.00	0.00	0.01
GDP DEFLATOR	0.03	0.06	0.12	0.31	0.09	0.09	0.04	0.09
ABSORPTION INFLATION (% PT)	0.07	0.07	0.12	0.09	0.13	0.13	0.05	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.02	0.05	0.24	0.04	0.04	0.02	0.05
LONG-TERM INTEREST RATE (% PT)	0.04	0.03	0.05	0.24	0.06	0.08	0.05	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.33	0.04	0.35	1.81	0.18	0.29	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.00	-0.02	-0.05	0.72	-0.02	-0.03	-0.01	0.12
NET FOREIGN ASSETS	-0.01	0.02	0.04	-0.31	0.00	0.05	0.03	-0.01
FOREIGN SAVING**	0.01	-0.03	-0.08	0.32	-0.03	-0.04	-0.02	0.01
+ GEN. GOVERNMENT BALANCE	-0.01	0.01	0.04	-0.72	0.02	0.01	0.01	-0.06
+ PRIVATE SAVING	0.01	0.04	0.09	0.63	0.05	0.07	0.03	0.15
= INVESTMENT	0.01	0.03	0.06	0.23	0.04	0.04	0.01	0.09
90								
REAL GDP	0.11	0.10	0.17	0.68	0.14	0.18	0.06	0.17
REAL GNP	0.11	0.10	0.18	0.62	0.14	0.18	0.06	0.17
REAL ABSORPTION	0.05	0.06	0.13	1.50	0.08	0.10	0.02	0.20
CAPITAL STOCK	0.02	0.02	0.06	0.30	0.04	0.04	0.01	0.06
GDP DEFLATOR	0.17	0.28	0.56	1.81	0.47	0.51	0.18	0.49
ABSORPTION INFLATION (% PT)	0.09	0.12	0.22	0.80	0.21	0.25	0.09	0.00
SHORT-TERM INTEREST RATE (% PT)	0.06	0.07	0.13	0.39	0.12	0.14	0.05	0.11
LONG-TERM INTEREST RATE (% PT)	0.04	0.03	0.05	0.20	0.06	0.08	0.05	0.06
EXCHANGE RATE ($/LOCAL UNIT)*	-0.23	0.01	0.25	1.33	0.10	0.22	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.09	-0.20	2.41	-0.10	-0.05	-0.00	0.20
NET FOREIGN ASSETS	0.02	0.10	0.27	-1.32	0.06	0.13	0.03	-0.03
FOREIGN SAVING**	-0.01	-0.04	-0.10	0.55	-0.02	-0.04	0.00	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.03	0.06	-1.00	0.04	-0.02	-0.01	-0.07
+ PRIVATE SAVING	0.07	0.14	0.22	1.02	0.13	0.26	0.08	0.25
= INVESTMENT	0.06	0.13	0.18	0.57	0.15	0.19	0.07	0.19
93								
REAL GDP	0.07	0.03	0.04	-0.16	0.01	0.03	0.04	0.03
REAL GNP	0.07	0.04	0.07	-0.32	0.02	0.04	0.03	0.02
REAL ABSORPTION	0.03	0.02	0.02	0.88	-0.02	0.01	0.01	0.10
CAPITAL STOCK	0.04	0.04	0.07	0.24	0.05	0.06	0.02	0.07
GDP DEFLATOR	0.54	0.60	1.00	4.11	0.95	1.26	0.51	1.13
ABSORPTION INFLATION (% PT)	0.11	0.08	0.09	0.58	0.11	0.20	0.12	0.00
SHORT-TERM INTEREST RATE (% PT)	0.11	0.12	0.19	0.56	0.17	0.23	0.10	0.18
LONG-TERM INTEREST RATE (% PT)	0.03	0.02	0.03	0.13	0.04	0.06	0.04	0.04
EXCHANGE RATE ($/LOCAL UNIT)*	-0.04	-0.03	0.06	0.37	-0.04	0.03	0.03	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.01	-0.20	-0.33	5.71	-0.17	0.13	0.05	0.41
NET FOREIGN ASSETS	0.03	0.22	0.64	-2.99	0.08	0.18	-0.02	-0.10
FOREIGN SAVING**	0.00	-0.05	-0.14	0.72	-0.00	-0.03	0.02	0.03
+ GEN. GOVERNMENT BALANCE	-0.02	0.04	0.04	-1.43	0.02	-0.11	-0.03	-0.12
+ PRIVATE SAVING	0.13	0.22	0.29	1.37	0.17	0.45	0.16	0.31
= INVESTMENT	0.11	0.21	0.19	0.66	0.18	0.31	0.15	0.22

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A6: UK FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.04	0.08	0.15	0.06	0.99	0.06	0.08	0.14
REAL GNP	0.04	0.08	0.14	0.06	0.96	0.06	0.08	0.14
REAL ABSORPTION	-0.01	0.03	0.07	0.01	1.68	0.00	0.03	0.15
CAPITAL STOCK	0.00	0.01	0.01	0.00	0.08	0.00	0.00	0.01
GDP DEFLATOR	0.03	0.06	0.11	0.05	0.32	0.06	0.05	0.08
ABSORPTION INFLATION (% PT)	0.08	0.08	0.15	0.08	-0.10	0.11	0.07	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.03	0.06	0.03	0.18	0.03	0.03	0.04
LONG-TERM INTEREST RATE (% PT)	0.03	0.03	0.04	0.05	0.16	0.05	0.04	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.27	0.05	0.32	0.21	1.78	0.16	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.00	-0.02	-0.04	-0.01	0.68	-0.02	-0.01	0.08
NET FOREIGN ASSETS	-0.01	0.03	0.02	0.02	-0.57	0.01	0.04	-0.01
FOREIGN SAVING**	0.01	-0.04	-0.05	-0.02	0.33	-0.01	-0.03	0.01
+ GEN. GOVERNMENT BALANCE	-0.00	0.02	0.03	0.00	-0.67	0.00	0.01	-0.04
+ PRIVATE SAVING	0.01	0.05	0.08	0.04	0.55	0.04	0.05	0.12
= INVESTMENT	0.02	0.04	0.06	0.02	0.20	0.03	0.03	0.08
90								
REAL GDP	0.13	0.11	0.13	0.15	0.49	0.13	0.08	0.16
REAL GNP	0.14	0.12	0.14	0.16	0.41	0.13	0.08	0.15
REAL ABSORPTION	0.06	0.07	0.08	0.08	1.46	0.06	0.03	0.18
CAPITAL STOCK	0.03	0.03	0.05	0.04	0.27	0.03	0.02	0.05
GDP DEFLATOR	0.21	0.31	0.48	0.32	1.56	0.33	0.23	0.40
ABSORPTION INFLATION (% PT)	0.10	0.14	0.19	0.16	0.62	0.16	0.12	0.00
SHORT-TERM INTEREST RATE (% PT)	0.07	0.08	0.12	0.10	0.27	0.10	0.07	0.10
LONG-TERM INTEREST RATE (% PT)	0.05	0.03	0.05	0.06	0.16	0.06	0.05	0.06
EXCHANGE RATE ($/LOCAL UNIT)*	-0.22	0.03	0.25	0.21	1.53	0.14	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.10	-0.14	-0.03	2.16	-0.02	-0.02	0.14
NET FOREIGN ASSETS	0.03	0.12	0.16	0.10	-1.56	0.04	0.04	-0.02
FOREIGN SAVING**	-0.02	-0.05	-0.06	-0.04	0.57	-0.01	0.00	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.04	0.04	0.00	-0.88	-0.02	-0.01	-0.05
+ PRIVATE SAVING	0.09	0.16	0.17	0.16	0.72	0.17	0.10	0.21
= INVESTMENT	0.08	0.14	0.15	0.13	0.41	0.13	0.10	0.17
93								
REAL GDP	0.06	0.00	0.02	0.00	-0.05	0.02	0.02	0.03
REAL GNP	0.06	0.02	0.04	0.01	-0.22	0.02	0.01	0.02
REAL ABSORPTION	0.03	-0.00	-0.01	-0.02	0.98	-0.01	-0.01	0.08
CAPITAL STOCK	0.05	0.03	0.05	0.04	0.21	0.04	0.03	0.06
GDP DEFLATOR	0.62	0.69	0.81	0.84	3.06	0.80	0.62	0.92
ABSORPTION INFLATION (% PT)	0.12	0.10	0.06	0.14	0.37	0.12	0.13	0.00
SHORT-TERM INTEREST RATE (% PT)	0.12	0.12	0.15	0.15	0.38	0.15	0.12	0.15
LONG-TERM INTEREST RATE (% PT)	0.05	0.03	0.04	0.06	0.12	0.06	0.06	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	0.06	-0.02	0.04	0.06	0.79	-0.01	0.04	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.01	-0.22	-0.20	0.04	4.83	0.13	0.05	0.28
NET FOREIGN ASSETS	0.04	0.25	0.39	0.17	-3.05	0.04	-0.02	-0.07
FOREIGN SAVING**	-0.00	-0.05	-0.08	-0.03	0.67	0.00	0.03	0.02
+ GEN. GOVERNMENT BALANCE	-0.02	0.04	0.02	-0.05	-1.16	-0.09	-0.04	-0.09
+ PRIVATE SAVING	0.14	0.24	0.22	0.24	0.89	0.28	0.18	0.26
= INVESTMENT	0.12	0.23	0.16	0.17	0.40	0.20	0.17	0.20

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A7: IT FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.01	0.04	0.12	0.08	0.07	0.93	0.03	0.10
REAL GNP	0.01	0.04	0.11	0.08	0.07	0.94	0.03	0.10
REAL ABSORPTION	-0.01	0.01	0.06	0.03	0.02	1.54	0.01	0.11
CAPITAL STOCK	-0.00	0.00	0.01	0.00	0.00	0.07	0.00	0.01
GDP DEFLATOR	0.02	0.04	0.09	0.05	0.06	0.32	0.03	0.07
ABSORPTION INFLATION (% PT)	0.05	0.05	0.10	0.06	0.10	-0.04	0.04	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.02	0.04	0.03	0.03	0.19	0.01	0.03
LONG-TERM INTEREST RATE (% PT)	0.03	0.03	0.04	0.07	0.05	0.25	0.03	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.26	0.02	0.25	0.29	0.10	1.99	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.00	-0.01	-0.04	-0.01	-0.01	0.72	-0.01	0.20
NET FOREIGN ASSETS	-0.01	0.02	0.03	0.04	-0.00	-0.17	0.02	-0.00
FOREIGN SAVING**	0.01	-0.02	-0.05	-0.04	-0.01	0.23	-0.02	0.00
+ GEN. GOVERNMENT BALANCE	-0.00	0.01	0.03	0.01	0.01	-0.71	0.00	-0.06
+ PRIVATE SAVING	0.00	0.03	0.07	0.05	0.03	0.64	0.03	0.14
= INVESTMENT	0.01	0.02	0.04	0.02	0.03	0.17	0.01	0.08
90								
REAL GDP	0.08	0.07	0.10	0.12	0.08	0.72	0.05	0.13
REAL GNP	0.08	0.07	0.11	0.13	0.08	0.69	0.05	0.13
REAL ABSORPTION	0.04	0.04	0.07	0.07	0.04	1.58	0.02	0.15
CAPITAL STOCK	0.01	0.02	0.04	0.03	0.03	0.28	0.01	0.04
GDP DEFLATOR	0.13	0.20	0.39	0.31	0.31	1.88	0.14	0.40
ABSORPTION INFLATION (% PT)	0.07	0.09	0.15	0.15	0.14	0.83	0.07	0.00
SHORT-TERM INTEREST RATE (% PT)	0.04	0.05	0.09	0.08	0.08	0.38	0.04	0.08
LONG-TERM INTEREST RATE (% PT)	0.03	0.02	0.03	0.06	0.04	0.23	0.03	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.21	0.03	0.20	0.29	0.08	1.58	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.06	-0.13	-0.04	-0.06	2.30	-0.00	0.26
NET FOREIGN ASSETS	0.01	0.06	0.16	0.13	0.01	-0.89	0.02	-0.02
FOREIGN SAVING**	-0.01	-0.03	-0.06	-0.04	0.00	0.37	0.00	0.01
+ GEN. GOVERNMENT BALANCE	-0.00	0.02	0.03	0.00	0.02	-1.03	-0.00	-0.08
+ PRIVATE SAVING	0.05	0.10	0.14	0.15	0.08	1.25	0.06	0.23
= INVESTMENT	0.05	0.09	0.12	0.11	0.10	0.60	0.06	0.16
93								
REAL GDP	0.05	0.01	0.03	0.01	0.01	-0.07	0.03	0.02
REAL GNP	0.05	0.02	0.05	0.02	0.01	-0.17	0.02	0.02
REAL ABSORPTION	0.03	0.00	0.01	-0.00	-0.02	1.01	0.00	0.08
CAPITAL STOCK	0.03	0.02	0.04	0.04	0.03	0.26	0.02	0.05
GDP DEFLATOR	0.40	0.41	0.64	0.78	0.57	4.34	0.38	0.94
ABSORPTION INFLATION (% PT)	0.08	0.05	0.04	0.13	0.05	0.64	0.08	0.00
SHORT-TERM INTEREST RATE (% PT)	0.08	0.08	0.12	0.14	0.11	0.59	0.08	0.13
LONG-TERM INTEREST RATE (% PT)	0.02	0.01	0.02	0.03	0.02	0.14	0.03	0.03
EXCHANGE RATE ($/LOCAL UNIT)*	-0.04	0.02	0.03	0.10	0.03	0.35	0.02	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.01	-0.13	-0.19	0.02	-0.08	5.51	0.04	0.38
NET FOREIGN ASSETS	0.01	0.14	0.36	0.21	-0.01	-2.07	-0.02	-0.06
FOREIGN SAVING**	0.00	-0.03	-0.07	-0.03	0.01	0.49	0.02	0.02
+ GEN. GOVERNMENT BALANCE	-0.01	0.02	0.02	-0.04	0.01	-1.50	-0.02	-0.11
+ PRIVATE SAVING	0.09	0.15	0.18	0.23	0.09	1.82	0.12	0.27
= INVESTMENT	0.08	0.14	0.13	0.16	0.11	0.81	0.11	0.18

* FOR U.S. .S MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A8: CA FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.08	0.06	0.07	0.04	0.07	0.03	0.50	0.08
REAL GNP	0.08	0.06	0.07	0.04	0.07	0.03	0.54	0.09
REAL ABSORPTION	0.03	0.03	0.03	0.01	0.03	0.01	1.41	0.08
CAPITAL STOCK	0.01	0.01	0.01	0.00	0.01	0.00	0.04	0.01
GDP DEFLATOR	0.03	0.03	0.04	0.02	0.04	0.02	0.11	0.03
ABSORPTION INFLATION (% PT)	0.05	0.05	0.05	0.03	0.06	0.04	-0.26	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.02	0.02	0.01	0.02	0.01	0.07	0.02
LONG-TERM INTEREST RATE (% PT)	0.02	0.01	0.01	0.01	0.01	0.01	0.09	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.10	-0.07	-0.08	-0.12	-0.08	-0.12	0.83	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.02	-0.02	-0.01	-0.02	-0.01	0.87	0.01
NET FOREIGN ASSETS	0.02	0.03	0.03	0.01	0.03	0.00	-0.27	-0.00
FOREIGN SAVING**	-0.02	-0.02	-0.02	-0.01	-0.02	-0.00	0.52	0.00
+ GEN. GOVERNMENT BALANCE	0.01	0.01	0.02	0.00	0.01	0.00	-0.86	-0.02
+ PRIVATE SAVING	0.04	0.04	0.04	0.02	0.03	0.02	0.38	0.04
= INVESTMENT	0.02	0.03	0.03	0.01	0.03	0.02	0.04	0.02
90								
REAL GDP	0.11	0.08	0.07	0.09	0.07	0.07	0.59	0.11
REAL GNP	0.11	0.09	0.08	0.09	0.07	0.07	0.57	0.11
REAL ABSORPTION	0.05	0.05	0.05	0.05	0.04	0.03	1.57	0.11
CAPITAL STOCK	0.03	0.03	0.03	0.02	0.02	0.02	0.20	0.04
GDP DEFLATOR	0.19	0.18	0.19	0.13	0.19	0.14	0.82	0.20
ABSORPTION INFLATION (% PT)	0.10	0.08	0.09	0.07	0.09	0.08	0.36	0.00
SHORT-TERM INTEREST RATE (% PT)	0.06	0.05	0.05	0.04	0.05	0.05	0.18	0.06
LONG-TERM INTEREST RATE (% PT)	0.03	0.01	0.01	0.02	0.02	0.02	0.10	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.08	-0.10	-0.13	-0.17	-0.13	-0.17	0.92	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.03	-0.07	-0.07	-0.02	-0.05	-0.02	2.57	0.04
NET FOREIGN ASSETS	0.07	0.09	0.09	0.04	0.05	0.01	-1.22	-0.00
FOREIGN SAVING**	-0.02	-0.03	-0.03	-0.02	-0.01	-0.01	0.54	0.00
+ GEN. GOVERNMENT BALANCE	0.01	0.03	0.02	0.00	0.02	-0.01	-0.99	-0.03
+ PRIVATE SAVING	0.08	0.10	0.08	0.07	0.06	0.08	0.78	0.10
= INVESTMENT	0.07	0.09	0.07	0.06	0.07	0.06	0.33	0.08
93								
REAL GDP	0.07	0.04	0.03	0.05	0.03	0.05	0.02	0.05
REAL GNP	0.07	0.06	0.05	0.06	0.04	0.05	-0.10	0.06
REAL ABSORPTION	0.03	0.02	0.01	0.02	0.00	0.02	1.13	0.07
CAPITAL STOCK	0.05	0.04	0.03	0.04	0.03	0.03	0.22	0.05
GDP DEFLATOR	0.57	0.47	0.44	0.40	0.46	0.40	2.28	0.57
ABSORPTION INFLATION (% PT)	0.13	0.10	0.08	0.10	0.08	0.09	0.43	0.00
SHORT-TERM INTEREST RATE (% PT)	0.12	0.10	0.09	0.09	0.09	0.09	0.27	0.11
LONG-TERM INTEREST RATE (% PT)	0.04	0.02	0.02	0.02	0.03	0.03	0.10	0.03
EXCHANGE RATE ($/LOCAL UNIT)*	0.00	-0.13	-0.19	-0.21	0.18	-0.21	0.71	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.17	-0.13	-0.01	-0.10	0.03	5.53	0.12
NET FOREIGN ASSETS	0.09	0.19	0.20	0.09	0.07	0.02	-2.76	-0.01
FOREIGN SAVING**	-0.01	-0.05	-0.05	-0.02	-0.01	0.00	0.64	0.01
+ GEN. GOVERNMENT BALANCE	-0.01	0.03	0.02	-0.01	0.01	-0.04	-1.32	-0.05
+ PRIVATE SAVING	0.13	0.19	0.13	0.14	0.09	0.15	1.08	0.17
= INVESTMENT	0.12	0.17	0.10	0.10	0.10	0.12	0.41	0.12

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A9: SI FISCAL SHOCK WITH CONSISTENT EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.10	0.19	0.50	0.32	0.41	0.26	0.15	0.22
REAL GNP	0.11	0.19	0.49	0.31	0.40	0.26	0.16	0.22
REAL ABSORPTION	0.01	0.08	0.29	0.13	0.22	0.08	0.05	0.09
CAPITAL STOCK	0.00	0.01	0.04	0.02	0.03	0.01	0.00	0.01
GDP DEFLATOR	0.07	0.14	0.31	0.15	0.25	0.17	0.08	0.14
ABSORPTION INFLATION (% PT)	0.13	0.17	0.23	0.16	0.20	0.23	0.08	0.00
SHORT-TERM INTEREST RATE (% PT)	0.05	0.07	0.14	0.09	0.12	0.09	0.05	0.08
LONG-TERM INTEREST RATE (% PT)	0.12	0.10	0.14	0.19	0.18	0.18	0.13	0.13
EXCHANGE RATE ($/LOCAL UNIT)*	-0.35	0.07	0.69	0.52	0.61	0.36	0.09	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.06	-0.18	-0.06	-0.12	-0.07	-0.03	0.01
NET FOREIGN ASSETS	0.03	0.09	0.25	0.18	0.14	0.14	0.14	0.12
FOREIGN SAVING**	-0.03	-0.10	-0.31	-0.18	-0.23	-0.13	-0.11	-0.12
- GEN. GOVERNMENT BALANCE	0.01	0.04	0.16	0.06	0.11	0.04	0.03	0.04
- PRIVATE SAVING	0.06	0.13	0.30	0.20	0.23	0.18	0.11	0.19
= INVESTMENT	0.03	0.08	0.15	0.08	0.12	0.09	0.03	0.11
90								
REAL GDP	0.25	0.24	0.31	0.34	0.31	0.32	0.19	0.27
REAL GNP	0.26	0.25	0.34	0.36	0.32	0.34	0.19	0.28
REAL ABSORPTION	0.12	0.15	0.24	0.20	0.20	0.17	0.09	0.15
CAPITAL STOCK	0.05	0.07	0.14	0.10	0.12	0.08	0.04	0.08
GDP DEFLATOR	0.45	0.72	1.29	0.90	1.20	0.96	0.47	0.75
ABSORPTION INFLATION (% PT)	0.23	0.31	0.49	0.44	0.53	0.47	0.25	0.00
SHORT-TERM INTEREST RATE (% PT)	0.14	0.18	0.28	0.24	0.27	0.25	0.13	0.19
LONG-TERM INTEREST RATE (% PT)	0.11	0.08	0.12	0.16	0.17	0.17	0.13	0.12
EXCHANGE RATE ($/LOCAL UNIT)*	-0.24	0.04	0.52	0.45	0.48	0.30	0.10	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.04	-0.24	-0.52	-0.15	-0.37	-0.11	-0.07	-0.13
NET FOREIGN ASSETS	0.13	0.30	0.79	0.44	0.44	0.33	0.25	0.33
FOREIGN SAVING**	-0.05	-0.12	-0.28	-0.15	-0.15	-0.10	-0.06	-0.11
- GEN. GOVERNMENT BALANCE	0.00	0.08	0.14	0.02	0.12	-0.05	0.00	0.04
- PRIVATE SAVING	0.19	0.36	0.50	0.43	0.37	0.49	0.24	0.37
= INVESTMENT	0.15	0.32	0.36	0.30	0.34	0.35	0.19	0.30
93								
REAL GDP	0.15	0.04	0.04	0.02	-0.01	0.04	0.08	0.08
REAL GNP	0.15	0.09	0.14	0.06	0.04	0.07	0.08	0.11
REAL ABSORPTION	0.08	0.03	0.01	-0.00	-0.04	0.01	0.02	0.04
CAPITAL STOCK	0.11	0.09	0.13	0.12	0.11	0.11	0.07	0.10
GDP DEFLATOR	1.35	1.46	2.09	2.22	2.29	2.22	1.35	1.73
ABSORPTION INFLATION (% PT)	0.27	0.17	0.14	0.36	0.23	0.31	0.30	0.00
SHORT-TERM INTEREST RATE (% PT)	0.26	0.27	0.38	0.40	0.39	0.40	0.26	0.31
LONG-TERM INTEREST RATE (% PT)	0.08	0.04	0.06	0.09	0.10	0.09	0.10	0.08
EXCHANGE RATE ($/LOCAL UNIT)*	0.06	0.04	0.13	0.07	0.10	0.07	0.13	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.51	-0.78	-0.00	-0.61	0.24	0.02	-0.24
NET FOREIGN ASSETS	0.18	0.61	1.66	0.74	0.77	0.47	0.27	0.57
FOREIGN SAVING**	-0.02	-0.12	-0.33	-0.12	-0.12	-0.06	-0.00	-0.10
- GEN. GOVERNMENT BALANCE	-0.03	0.09	0.10	-0.09	0.08	-0.20	-0.05	0.00
- PRIVATE SAVING	0.32	0.53	0.61	0.66	0.44	0.80	0.43	0.49
= INVESTMENT	0.27	0.50	0.38	0.45	0.40	0.54	0.38	0.40

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A10: US FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	1.54	0.33	0.26	0.15	0.25	0.15	0.64	0.82
REAL GNP	1.59	0.34	0.26	0.15	0.25	0.15	0.65	0.83
REAL ABSORPTION	1.77	0.15	0.13	0.08	0.13	0.06	0.30	0.85
CAPITAL STOCK	0.12	0.03	0.02	0.01	0.02	0.01	0.05	0.06
GDP DEFLATOR	0.16	0.04	0.03	0.02	0.04	0.02	0.10	0.08
ABSORPTION INFLATION (% PT)	0.08	0.11	0.07	0.04	0.07	0.06	0.21	0.00
SHORT-TERM INTEREST RATE (% PT)	0.34	0.09	0.07	0.04	0.06	0.04	0.17	0.19
LONG-TERM INTEREST RATE (% PT)	0.11	0.03	0.02	0.01	0.02	0.01	0.06	0.06
EXCHANGE RATE ($/LOCAL UNIT)*	0.24	-0.23	-0.26	-0.28	-0.26	-0.27	-0.16	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	0.70	-0.07	-0.07	-0.03	-0.06	0.03	-0.11	0.19
NET FOREIGN ASSETS	-0.23	0.15	0.12	0.06	0.12	0.04	0.19	-0.03
FOREIGN SAVING**	0.23	-0.12	-0.10	-0.06	-0.09	-0.04	-0.24	0.03
+ GEN. GOVERNMENT BALANCE	-0.70	0.06	0.06	0.02	0.05	0.02	0.10	-0.25
+ PRIVATE SAVING	0.74	0.16	0.11	0.07	0.10	0.07	0.33	0.33
= INVESTMENT	0.26	0.10	0.07	0.04	0.07	0.05	0.19	0.12
90								
REAL GDP	1.57	0.43	0.33	0.24	0.30	0.24	0.76	0.88
REAL GNP	1.57	0.49	0.39	0.25	0.35	0.24	0.73	0.89
REAL ABSORPTION	1.87	0.26	0.22	0.14	0.19	0.13	0.41	0.94
CAPITAL STOCK	0.54	0.13	0.10	0.07	0.10	0.07	0.23	0.26
GDP DEFLATOR	1.09	0.31	0.24	0.15	0.25	0.17	0.59	0.59
ABSORPTION INFLATION (% PT)	0.52	0.16	0.13	0.09	0.14	0.11	0.33	0.00
SHORT-TERM INTEREST RATE (% PT)	0.49	0.17	0.13	0.08	0.12	0.09	0.28	0.28
LONG-TERM INTEREST RATE (% PT)	0.31	0.10	0.08	0.05	0.07	0.05	0.17	0.18
EXCHANGE RATE ($/LOCAL UNIT)*	0.30	-0.29	-0.33	-0.37	-0.33	-0.36	-0.19	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	2.17	-0.26	-0.26	-0.10	-0.22	-0.06	-0.29	0.68
NET FOREIGN ASSETS	-0.75	0.45	0.39	0.19	0.32	0.12	0.48	-0.10
FOREIGN SAVING**	0.30	-0.18	-0.16	-0.08	-0.10	-0.04	-0.16	0.04
+ GEN. GOVERNMENT BALANCE	-0.88	0.10	0.09	0.03	0.08	0.00	0.08	-0.31
+ PRIVATE SAVING	1.17	0.35	0.24	0.16	0.19	0.18	0.55	0.59
= INVESTMENT	0.60	0.27	0.18	0.12	0.17	0.14	0.47	0.33
93								
REAL GDP	0.80	0.38	0.26	0.21	0.23	0.22	0.62	0.52
REAL GNP	0.69	0.52	0.40	0.23	0.30	0.21	0.57	0.52
REAL ABSORPTION	1.29	0.19	0.12	0.07	0.08	0.07	0.19	0.63
CAPITAL STOCK	0.71	0.21	0.16	0.11	0.15	0.12	0.36	0.37
GDP DEFLATOR	3.31	1.00	0.76	0.55	0.79	0.61	1.95	1.85
ABSORPTION INFLATION (% PT)	0.72	0.28	0.20	0.17	0.22	0.18	0.54	0.00
SHORT-TERM INTEREST RATE (% PT)	0.65	0.30	0.23	0.16	0.21	0.17	0.50	0.41
LONG-TERM INTEREST RATE (% PT)	0.52	0.21	0.16	0.11	0.15	0.12	0.36	0.32
EXCHANGE RATE ($/LOCAL UNIT)*	0.35	-0.33	-0.40	-0.46	-0.40	-0.44	-0.14	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	4.97	-0.60	-0.52	-0.13	-0.41	0.01	-0.31	1.69
NET FOREIGN ASSETS	-1.82	1.07	1.00	0.41	0.63	0.21	0.85	-0.27
FOREIGN SAVING**	0.49	-0.28	-0.28	-0.10	-0.13	-0.04	-0.16	0.08
+ GEN. GOVERNMENT BALANCE	-1.27	0.13	0.10	0.00	0.08	-0.06	-0.02	-0.47
+ PRIVATE SAVING	1.42	0.62	0.40	0.28	0.28	0.33	0.89	0.82
= INVESTMENT	0.65	0.47	0.22	0.17	0.22	0.22	0.71	0.42

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A10A: US MONETARY SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.04	0.01	0.02	0.02	0.02	0.02	0.00	0.03
REAL GNP	0.04	0.01	0.01	0.02	0.01	0.02	0.01	0.03
REAL ABSORPTION	0.03	0.00	0.01	0.01	0.01	0.01	0.01	0.02
CAPITAL STOCK	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GDP DEFLATOR	0.01	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
ABSORPTION INFLATION (% PT)	0.03	-0.00	-0.00	0.00	-0.00	0.00	-0.04	0.00
SHORT-TERM INTEREST RATE (% PT)	-0.16	0.00	0.00	0.00	0.00	0.00	-0.01	-0.07
LONG-TERM INTEREST RATE (% PT)	-0.05	0.00	0.00	0.00	0.00	0.00	-0.00	-0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.22	0.22	0.23	0.22	0.21	0.21	0.21	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.00	-0.00	-0.00	-0.00	-0.00	-0.01	0.04
NET FOREIGN ASSETS	-0.01	-0.02	-0.01	0.01	-0.02	0.02	0.09	0.00
FOREIGN SAVING**	0.01	-0.00	-0.01	-0.01	-0.01	-0.01	-0.03	-0.00
+ GEN. GOVERNMENT BALANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.00
+ PRIVATE SAVING	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.05
= INVESTMENT	0.02	0.00	0.00	0.00	0.00	0.00	-0.01	0.04
90								
REAL GDP	0.12	-0.00	0.01	0.02	0.01	0.02	-0.01	0.05
REAL GNP	0.13	-0.02	-0.01	0.02	0.00	0.03	0.02	0.06
REAL ABSORPTION	0.09	-0.01	0.00	0.01	0.00	0.02	0.01	0.04
CAPITAL STOCK	0.04	-0.00	0.00	0.01	0.00	0.01	-0.00	0.02
GDP DEFLATOR	0.06	-0.00	0.00	0.01	0.00	0.01	-0.02	0.03
ABSORPTION INFLATION (% PT)	0.03	0.00	0.00	0.01	0.00	0.01	-0.00	0.00
SHORT-TERM INTEREST RATE (% PT)	-0.13	-0.01	-0.00	0.01	0.00	0.01	-0.00	-0.06
LONG-TERM INTEREST RATE (% PT)	-0.10	-0.00	-0.00	0.00	-0.00	0.00	-0.00	-0.04
EXCHANGE RATE ($/LOCAL UNIT)*	-0.30	0.30	0.31	0.31	0.30	0.31	0.29	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.08	0.01	-0.00	-0.01	-0.00	0.00	-0.02	0.03
NET FOREIGN ASSETS	0.02	-0.04	-0.02	0.03	-0.03	0.04	0.18	0.02
FOREIGN SAVING**	-0.02	0.01	0.00	-0.01	0.00	-0.01	-0.04	-0.01
+ GEN. GOVERNMENT BALANCE	0.02	-0.00	-0.00	0.00	0.00	-0.00	0.01	0.00
+ PRIVATE SAVING	0.05	-0.01	-0.00	0.02	0.00	0.03	0.01	0.08
= INVESTMENT	0.06	-0.00	0.00	0.01	0.00	0.01	-0.02	0.07
93								
REAL GDP	0.12	0.01	0.01	0.01	0.01	0.02	0.02	0.06
REAL GNP	0.15	-0.01	-0.01	0.02	0.00	0.03	0.07	0.06
REAL ABSORPTION	0.10	-0.00	0.00	0.01	0.01	0.02	0.03	0.05
CAPITAL STOCK	0.09	0.00	0.01	0.01	0.01	0.01	-0.00	0.04
GDP DEFLATOR	0.24	-0.00	0.02	0.04	0.02	0.04	-0.05	0.11
ABSORPTION INFLATION (% PT)	0.06	0.00	0.01	0.01	0.01	0.01	0.00	0.00
SHORT-TERM INTEREST RATE (% PT)	-0.10	-0.00	0.00	0.01	0.00	0.01	0.01	-0.04
LONG-TERM INTEREST RATE (% PT)	-0.11	-0.00	0.00	0.01	0.00	0.01	0.00	-0.04
EXCHANGE RATE ($/LOCAL UNIT)*	-0.41	0.40	0.41	0.43	0.41	0.44	0.41	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.11	0.01	0.00	-0.00	-0.00	0.03	-0.04	0.05
NET FOREIGN ASSETS	0.09	-0.08	-0.05	0.07	-0.04	0.08	0.33	0.05
FOREIGN SAVING**	-0.03	0.02	0.01	-0.01	0.00	-0.02	-0.05	-0.01
+ GEN. GOVERNMENT BALANCE	-0.01	-0.00	-0.00	-0.00	-0.00	-0.02	0.01	-0.01
+ PRIVATE SAVING	0.12	-0.01	-0.00	0.03	0.01	0.04	0.04	0.12
= INVESTMENT	0.08	0.00	0.01	0.01	0.01	0.01	-0.01	0.10

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A11: ROECD FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.40	1.93	2.47	1.97	2.31	1.76	1.08	1.33
REAL GNP	0.42	1.93	2.47	1.97	2.28	1.76	1.11	1.35
REAL ABSORPTION	0.17	2.05	2.41	2.08	2.32	1.88	1.65	1.26
CAPITAL STOCK	0.03	0.16	0.20	0.16	0.19	0.14	0.09	0.12
GDP DEFLATOR	0.06	0.17	0.22	0.17	0.26	0.15	0.13	0.13
ABSORPTION INFLATION (% PT)	0.15	0.14	0.18	0.14	0.16	0.15	-0.04	0.00
SHORT-TERM INTEREST RATE (% PT)	0.11	0.43	0.54	0.43	0.50	0.39	0.23	0.31
LONG-TERM INTEREST RATE (% PT)	0.04	0.14	0.18	0.14	0.17	0.13	0.07	0.10
EXCHANGE RATE ($/LOCAL UNIT)*	-0.26	0.30	0.41	0.30	0.35	0.25	0.10	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.07	0.56	0.30	0.58	0.42	0.61	0.79	0.35
NET FOREIGN ASSETS	0.14	-0.05	0.19	-0.06	-0.01	-0.11	-0.36	0.06
FOREIGN SAVING**	-0.14	0.02	-0.23	0.06	-0.04	0.12	0.39	-0.06
+ GEN. GOVERNMENT BALANCE	0.06	-0.57	-0.32	-0.59	-0.42	-0.63	-0.79	-0.31
+ PRIVATE SAVING	0.17	0.95	1.13	0.96	1.00	0.91	0.62	0.72
= INVESTMENT	0.09	0.39	0.58	0.43	0.54	0.39	0.22	0.35
90								
REAL GDP	0.65	2.01	2.18	2.30	2.13	2.42	1.61	1.49
REAL GNP	0.69	2.00	2.20	2.29	2.10	2.42	1.59	1.52
REAL ABSORPTION	0.31	2.27	2.46	2.40	2.38	2.47	2.10	1.46
CAPITAL STOCK	0.18	0.67	0.81	0.73	0.78	0.71	0.16	0.52
GDP DEFLATOR	0.44	1.34	1.65	1.48	1.63	1.44	0.93	1.04
ABSORPTION INFLATION (% PT)	0.27	0.68	0.80	0.82	0.82	0.83	0.49	0.01
SHORT-TERM INTEREST RATE (% PT)	0.25	0.63	0.72	0.73	0.69	0.75	0.46	0.50
LONG-TERM INTEREST RATE (% PT)	0.14	0.40	0.47	0.44	0.44	0.44	0.27	0.30
EXCHANGE RATE ($/LOCAL UNIT)*	-0.38	0.37	0.45	0.45	0.41	0.46	0.20	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.22	1.54	0.90	1.79	1.27	1.96	2.29	0.95
NET FOREIGN ASSETS	0.46	-0.11	0.32	-0.17	-0.34	-0.22	-0.93	0.13
FOREIGN SAVING**	-0.18	0.04	-0.07	0.06	0.19	0.07	0.34	-0.04
+ GEN. GOVERNMENT BALANCE	0.07	-0.60	-0.44	-0.74	-0.55	-0.91	-0.88	-0.38
+ PRIVATE SAVING	0.38	1.65	1.65	1.78	1.46	2.03	1.33	1.27
= INVESTMENT	0.27	1.09	1.14	1.09	1.10	1.19	0.79	0.86
93								
REAL GDP	0.58	0.83	0.55	0.86	0.75	1.08	0.83	0.71
REAL GNP	0.63	0.81	0.58	0.84	0.70	1.06	0.73	0.71
REAL ABSORPTION	0.20	1.33	1.01	1.17	1.12	1.39	1.40	0.78
CAPITAL STOCK	0.32	0.85	0.89	0.93	0.92	1.00	0.69	0.68
GDP DEFLATOR	1.58	3.92	4.42	4.76	4.55	4.84	3.17	3.24
ABSORPTION INFLATION (% PT)	0.44	0.82	0.87	1.11	0.95	1.12	0.80	0.01
SHORT-TERM INTEREST RATE (% PT)	0.43	0.80	0.83	0.97	0.88	1.02	0.66	0.69
LONG-TERM INTEREST RATE (% PT)	0.31	0.65	0.70	0.77	0.71	0.80	0.50	0.54
EXCHANGE RATE ($/LOCAL UNIT)*	-0.36	0.35	0.38	0.50	0.41	0.54	0.20	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.28	3.28	2.80	4.69	3.41	5.31	5.15	2.33
NET FOREIGN ASSETS	0.86	-0.30	0.60	-0.44	-0.95	-0.51	-1.91	0.15
FOREIGN SAVING**	-0.16	0.10	-0.10	0.16	0.27	0.15	0.45	0.01
+ GEN. GOVERNMENT BALANCE	-0.00	-0.83	-0.91	-1.35	-0.99	-1.69	-1.32	-0.67
+ PRIVATE SAVING	0.58	2.18	1.83	2.29	1.64	2.90	1.83	1.66
= INVESTMENT	0.42	1.46	0.82	1.10	0.92	1.36	0.96	0.99

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A12: JA FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.09	1.52	0.12	0.08	0.10	0.07	0.11	0.34
REAL GNP	0.09	1.52	0.12	0.08	0.10	0.07	0.11	0.35
REAL ABSORPTION	0.04	1.86	0.06	0.04	0.05	0.03	0.05	0.35
CAPITAL STOCK	0.01	0.12	0.01	0.01	0.01	0.01	0.01	0.03
GDP DEFLATOR	0.01	0.12	0.01	0.01	0.02	0.01	0.02	0.03
ABSORPTION INFLATION (% PT)	0.04	0.01	0.03	0.02	0.03	0.03	0.03	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.32	0.03	0.02	0.03	0.02	0.03	0.07
LONG-TERM INTEREST RATE (% PT)	0.01	0.11	0.01	0.01	0.01	0.01	0.01	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.06	0.28	0.01	-0.00	0.00	-0.00	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	0.65	-0.03	-0.01	-0.02	-0.01	-0.02	0.16
NET FOREIGN ASSETS	0.03	-0.20	0.04	0.03	0.03	0.02	0.05	-0.02
FOREIGN SAVING**	-0.03	0.17	-0.04	-0.03	-0.03	-0.02	-0.05	0.02
+ GEN. GOVERNMENT BALANCE	0.01	-0.65	0.03	0.01	0.02	0.01	0.02	-0.15
+ PRIVATE SAVING	0.03	0.75	0.05	0.04	0.04	0.03	0.06	0.24
= INVESTMENT	0.02	0.28	0.03	0.02	0.03	0.02	0.03	0.11
90								
REAL GDP	0.18	1.41	0.22	0.17	0.18	0.16	0.20	0.40
REAL GNP	0.19	1.38	0.23	0.17	0.19	0.17	0.21	0.41
REAL ABSORPTION	0.09	1.93	0.14	0.10	0.11	0.09	0.12	0.42
CAPITAL STOCK	0.04	0.51	0.06	0.04	0.05	0.04	0.05	0.13
GDP DEFLATOR	0.11	0.95	0.13	0.08	0.12	0.09	0.12	0.21
ABSORPTION INFLATION (% PT)	0.07	0.45	0.07	0.05	0.07	0.06	0.07	0.00
SHORT-TERM INTEREST RATE (% PT)	0.06	0.42	0.07	0.05	0.06	0.06	0.07	0.12
LONG-TERM INTEREST RATE (% PT)	0.03	0.27	0.04	0.03	0.04	0.03	0.04	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.08	0.34	0.01	-0.01	-0.00	-0.01	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.05	1.87	-0.14	-0.06	-0.10	-0.04	-0.08	0.43
NET FOREIGN ASSETS	0.11	-0.65	0.19	0.13	0.13	0.09	0.17	-0.05
FOREIGN SAVING**	-0.05	0.26	-0.08	-0.06	-0.05	-0.04	-0.07	0.02
+ GEN. GOVERNMENT BALANCE	0.02	-0.72	0.05	0.02	0.04	0.01	0.03	-0.16
+ PRIVATE SAVING	0.10	1.20	0.14	0.11	0.10	0.12	0.15	0.42
= INVESTMENT	0.07	0.74	0.11	0.07	0.09	0.08	0.11	0.28
93								
REAL GDP	0.19	0.43	0.16	0.14	0.14	0.15	0.19	0.22
REAL GNP	0.20	0.33	0.19	0.16	0.16	0.16	0.20	0.21
REAL ABSORPTION	0.07	1.16	0.07	0.06	0.05	0.06	0.08	0.27
CAPITAL STOCK	0.09	0.59	0.10	0.08	0.09	0.08	0.10	0.18
GDP DEFLATOR	0.41	2.62	0.43	0.33	0.40	0.36	0.46	0.66
ABSORPTION INFLATION (% PT)	0.12	0.48	0.12	0.10	0.11	0.11	0.14	0.00
SHORT-TERM INTEREST RATE (% PT)	0.12	0.46	0.12	0.10	0.11	0.10	0.13	0.17
LONG-TERM INTEREST RATE (% PT)	0.08	0.40	0.09	0.07	0.08	0.07	0.09	0.13
EXCHANGE RATE ($/LOCAL UNIT)*	-0.07	0.32	-0.00	-0.02	-0.01	0.02	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.09	3.96	-0.28	-0.11	-0.22	-0.02	-0.13	0.93
NET FOREIGN ASSETS	0.25	-1.46	0.50	0.33	0.30	0.23	0.37	-0.12
FOREIGN SAVING**	-0.06	0.37	-0.13	-0.08	-0.07	-0.05	-0.09	0.04
+ GEN. GOVERNMENT BALANCE	0.01	-0.94	0.05	0.01	0.04	-0.03	0.01	-0.23
+ PRIVATE SAVING	0.17	1.45	0.21	0.18	0.15	0.22	0.25	0.54
= INVESTMENT	0.12	0.88	0.13	0.11	0.12	0.14	0.18	0.35

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A13: GR FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.04	0.07	1.20	0.13	0.17	0.13	0.04	0.20
REAL GNP	0.04	0.07	1.20	0.13	0.16	0.13	0.04	0.20
REAL ABSORPTION	0.01	0.03	1.72	0.07	0.09	0.06	0.02	0.22
CAPITAL STOCK	0.00	0.01	0.10	0.01	0.01	0.01	0.00	0.02
GDP DEFLATOR	0.01	0.01	0.09	0.01	0.02	0.02	0.01	0.02
ABSORPTION INFLATION (% PT)	0.02	0.02	0.02	0.03	0.04	0.05	0.01	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.02	0.25	0.03	0.04	0.04	0.01	0.05
LONG-TERM INTEREST RATE (% PT)	0.00	0.01	0.08	0.01	0.01	0.01	0.00	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.05	0.01	0.23	0.02	0.03	0.02	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.01	0.64	-0.02	-0.04	-0.03	-0.01	0.07
NET FOREIGN ASSETS	0.01	0.02	-0.38	0.05	0.06	0.05	0.02	-0.02
FOREIGN SAVING**	-0.01	-0.02	0.36	-0.05	-0.06	-0.05	-0.02	0.02
+ GEN. GOVERNMENT BALANCE	0.00	0.01	-0.64	0.02	0.04	0.02	0.01	-0.06
+ PRIVATE SAVING	0.01	0.03	0.56	0.06	0.07	0.06	0.02	0.10
= INVESTMENT	0.01	0.02	0.27	0.03	0.04	0.04	0.01	0.05
90								
REAL GDP	0.09	0.13	0.90	0.23	0.23	0.24	0.09	0.22
REAL GNP	0.09	0.13	0.84	0.24	0.24	0.25	0.09	0.22
REAL ABSORPTION	0.04	0.07	1.64	0.14	0.14	0.14	0.05	0.24
CAPITAL STOCK	0.02	0.03	0.37	0.06	0.07	0.06	0.02	0.08
GDP DEFLATOR	0.05	0.08	0.69	0.13	0.16	0.15	0.06	0.15
ABSORPTION INFLATION (% PT)	0.03	0.04	0.30	0.09	0.10	0.10	0.04	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.04	0.26	0.08	0.08	0.09	0.03	0.08
LONG-TERM INTEREST RATE (% PT)	0.02	0.03	0.19	0.05	0.05	0.05	0.02	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.06	0.01	0.22	0.05	0.05	0.05	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.06	1.99	-0.09	-0.15	-0.07	-0.03	0.18
NET FOREIGN ASSETS	0.04	0.10	-1.31	0.19	0.19	0.16	0.06	-0.05
FOREIGN SAVING**	-0.02	-0.04	0.52	-0.08	-0.07	-0.06	-0.02	0.02
+ GEN. GOVERNMENT BALANCE	0.01	0.03	-0.78	0.03	0.06	0.01	0.01	-0.07
+ PRIVATE SAVING	0.05	0.09	0.72	0.16	0.14	0.18	0.06	0.17
= INVESTMENT	0.04	0.07	0.46	0.11	0.12	0.13	0.05	0.12
93								
REAL GDP	0.07	0.08	0.11	0.11	0.07	0.11	0.06	0.08
REAL GNP	0.08	0.10	-0.05	0.13	0.09	0.13	0.06	0.08
REAL ABSORPTION	0.03	0.04	0.95	0.02	-0.00	0.03	0.02	0.12
CAPITAL STOCK	0.04	0.05	0.36	0.09	0.09	0.10	0.04	0.10
GDP DEFLATOR	0.20	0.26	1.67	0.48	0.49	0.51	0.20	0.46
ABSORPTION INFLATION (% PT)	0.06	0.07	0.26	0.13	0.12	0.13	0.07	0.00
SHORT-TERM INTEREST RATE (% PT)	0.06	0.07	0.23	0.12	0.11	0.13	0.05	0.10
LONG-TERM INTEREST RATE (% PT)	0.04	0.05	0.22	0.09	0.09	0.10	0.04	0.08
EXCHANGE RATE ($/LOCAL UNIT)*	-0.06	0.01	0.16	0.06	0.05	0.06	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.03	-0.14	4.46	-0.10	-0.25	-0.00	-0.03	0.42
NET FOREIGN ASSETS	0.09	0.23	-2.66	0.37	0.34	0.29	0.09	-0.11
FOREIGN SAVING**	-0.02	-0.06	0.58	-0.07	-0.06	-0.05	-0.01	0.03
+ GEN. GOVERNMENT BALANCE	-0.00	0.03	-1.07	-0.01	0.03	-0.06	-0.00	-0.11
+ PRIVATE SAVING	0.07	0.14	0.71	0.21	0.14	0.26	0.09	0.20
= INVESTMENT	0.05	0.11	0.23	0.13	0.11	0.16	0.08	0.12

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A14: FR FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.03	0.04	0.19	1.17	0.11	0.12	0.03	0.17
REAL GNP	0.03	0.04	0.19	1.16	0.11	0.13	0.03	0.17
REAL ABSORPTION	0.01	0.02	0.10	1.65	0.06	0.06	0.01	0.18
CAPITAL STOCK	0.00	0.00	0.02	0.09	0.01	0.01	0.00	0.02
GDP DEFLATOR	0.00	0.01	0.02	0.09	0.02	0.01	0.01	0.02
ABSORPTION INFLATION (% PT)	0.02	0.02	0.03	0.02	0.03	0.04	0.01	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.01	0.05	0.25	0.03	0.03	0.01	0.04
LONG-TERM INTEREST RATE (% PT)	0.00	0.00	0.01	0.08	0.01	0.01	0.00	0.01
EXCHANGE RATE ($/LOCAL UNIT)*	-0.04	0.00	0.04	0.22	0.02	0.02	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.01	-0.05	0.73	-0.03	-0.02	-0.01	0.06
NET FOREIGN ASSETS	0.01	0.01	0.08	-0.40	0.04	0.05	0.01	-0.01
FOREIGN SAVING**	-0.01	-0.01	-0.08	0.40	-0.04	-0.05	-0.01	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.01	0.05	-0.73	0.02	0.02	0.00	-0.05
+ PRIVATE SAVING	0.01	0.02	0.08	0.57	0.04	0.06	0.02	0.08
= INVESTMENT	0.01	0.01	0.05	0.24	0.03	0.03	0.01	0.04
90								
REAL GDP	0.05	0.07	0.19	1.23	0.12	0.17	0.05	0.19
REAL GNP	0.05	0.07	0.20	1.17	0.13	0.18	0.05	0.19
REAL ABSORPTION	0.02	0.04	0.13	1.78	0.07	0.10	0.03	0.21
CAPITAL STOCK	0.01	0.02	0.07	0.41	0.04	0.05	0.01	0.07
GDP DEFLATOR	0.04	0.05	0.15	0.80	0.10	0.12	0.04	0.15
ABSORPTION INFLATION (% PT)	0.02	0.02	0.07	0.40	0.06	0.07	0.02	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.03	0.07	0.36	0.05	0.06	0.02	0.07
LONG-TERM INTEREST RATE (% PT)	0.01	0.01	0.04	0.23	0.03	0.04	0.01	0.04
EXCHANGE RATE ($/LOCAL UNIT)*	-0.05	0.01	0.05	0.32	0.03	0.04	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.04	-0.16	2.28	-0.09	-0.06	-0.02	0.16
NET FOREIGN ASSETS	0.03	0.05	0.24	-1.24	0.10	0.14	0.03	-0.03
FOREIGN SAVING**	-0.01	-0.02	-0.09	0.46	-0.03	-0.05	-0.01	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.01	0.05	-0.90	0.03	0.01	0.00	-0.06
+ PRIVATE SAVING	0.03	0.05	0.14	1.00	0.07	0.13	0.04	0.15
= INVESTMENT	0.02	0.04	0.10	0.57	0.07	0.09	0.03	0.10
93								
REAL GDP	0.04	0.05	0.07	0.32	0.04	0.08	0.03	0.07
REAL GNP	0.05	0.06	0.09	0.18	0.05	0.10	0.03	0.07
REAL ABSORPTION	0.01	0.02	0.01	1.05	-0.01	0.02	0.01	0.11
CAPITAL STOCK	0.02	0.03	0.08	0.49	0.05	0.07	0.02	0.08
GDP DEFLATOR	0.13	0.15	0.41	2.40	0.29	0.39	0.13	0.47
ABSORPTION INFLATION (% PT)	0.04	0.04	0.09	0.48	0.07	0.10	0.04	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.04	0.09	0.40	0.07	0.10	0.03	0.09
LONG-TERM INTEREST RATE (% PT)	0.02	0.03	0.07	0.34	0.05	0.07	0.02	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.06	0.00	0.05	0.35	0.03	0.06	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.08	-0.25	5.22	-0.13	-0.00	-0.01	0.39
NET FOREIGN ASSETS	0.05	0.12	0.48	-2.50	0.16	0.23	0.03	-0.08
FOREIGN SAVING**	-0.01	-0.03	-0.10	0.56	-0.02	-0.04	-0.00	0.02
+ GEN. GOVERNMENT BALANCE	-0.00	0.01	0.03	-1.29	0.01	-0.04	-0.01	-0.11
+ PRIVATE SAVING	0.04	0.08	0.16	1.20	0.08	0.20	0.05	0.19
= INVESTMENT	0.03	0.07	0.09	0.47	0.07	0.12	0.05	0.10

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A15: UK FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.03	0.04	0.11	0.07	1.31	0.06	0.04	0.15
REAL GNP	0.03	0.04	0.11	0.07	1.29	0.06	0.04	0.15
REAL ABSORPTION	0.01	0.02	0.06	0.03	1.77	0.03	0.02	0.16
CAPITAL STOCK	0.00	0.00	0.01	0.01	0.11	0.00	0.00	0.01
GDP DEFLATOR	0.01	0.01	0.01	0.01	0.13	0.01	0.01	0.02
ABSORPTION INFLATION (% PT)	0.02	0.02	0.03	0.02	-0.00	0.02	0.02	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.01	0.03	0.02	0.27	0.02	0.01	0.03
LONG-TERM INTEREST RATE (% PT)	0.00	0.00	0.01	0.01	0.09	0.01	0.00	0.01
EXCHANGE RATE ($/LOCAL UNIT)*	-0.02	0.00	0.02	0.01	0.24	0.01	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.01	-0.03	-0.01	0.66	-0.01	-0.01	0.04
NET FOREIGN ASSETS	0.01	0.01	0.04	0.03	-0.40	0.02	0.02	-0.01
FOREIGN SAVING**	-0.01	-0.01	-0.04	-0.03	0.37	-0.02	-0.01	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.01	0.03	0.01	-0.66	0.01	0.01	-0.04
+ PRIVATE SAVING	0.01	0.02	0.05	0.03	0.58	0.03	0.02	0.06
= INVESTMENT	0.01	0.01	0.03	0.02	0.29	0.02	0.01	0.04
90								
REAL GDP	0.06	0.08	0.17	0.13	1.03	0.12	0.07	0.17
REAL GNP	0.07	0.08	0.18	0.13	0.96	0.12	0.07	0.16
REAL ABSORPTION	0.03	0.05	0.11	0.07	1.71	0.06	0.04	0.18
CAPITAL STOCK	0.02	0.02	0.05	0.03	0.41	0.03	0.02	0.06
GDP DEFLATOR	0.04	0.05	0.12	0.07	0.78	0.07	0.05	0.13
ABSORPTION INFLATION (% PT)	0.03	0.03	0.07	0.05	0.33	0.05	0.03	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.03	0.06	0.04	0.29	0.04	0.03	0.06
LONG-TERM INTEREST RATE (% PT)	0.01	0.02	0.04	0.02	0.20	0.02	0.01	0.03
EXCHANGE RATE ($/LOCAL UNIT)*	-0.03	0.00	0.04	0.02	0.25	0.02	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.04	-0.12	-0.05	2.07	-0.03	-0.02	0.11
NET FOREIGN ASSETS	0.03	0.06	0.16	0.10	-1.42	0.07	0.04	-0.03
FOREIGN SAVING**	-0.01	-0.03	-0.06	-0.04	0.56	-0.03	-0.02	0.01
+ GEN. GOVERNMENT BALANCE	0.01	0.02	0.04	0.02	-0.83	0.00	0.01	-0.04
+ PRIVATE SAVING	0.04	0.06	0.11	0.08	0.78	0.08	0.05	0.11
= INVESTMENT	0.03	0.05	0.09	0.06	0.51	0.06	0.04	0.08
93								
REAL GDP	0.05	0.05	0.04	0.05	0.31	0.04	0.04	0.07
REAL GNP	0.05	0.06	0.06	0.06	0.15	0.05	0.04	0.06
REAL ABSORPTION	0.02	0.02	-0.01	0.01	1.09	0.00	0.00	0.10
CAPITAL STOCK	0.03	0.03	0.06	0.05	0.46	0.04	0.03	0.08
GDP DEFLATOR	0.15	0.16	0.34	0.26	1.99	0.25	0.17	0.37
ABSORPTION INFLATION (% PT)	0.04	0.04	0.08	0.07	0.34	0.06	0.05	0.00
SHORT-TERM INTEREST RATE (% PT)	0.04	0.04	0.08	0.06	0.31	0.06	0.04	0.07
LONG-TERM INTEREST RATE (% PT)	0.03	0.03	0.06	0.05	0.27	0.05	0.03	0.06
EXCHANGE RATE ($/LOCAL UNIT)*	-0.03	0.00	0.03	0.02	0.25	0.02	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.09	-0.17	-0.05	4.66	0.01	-0.02	0.27
NET FOREIGN ASSETS	0.06	0.14	0.30	0.19	-2.82	0.11	0.06	-0.07
FOREIGN SAVING**	-0.01	-0.03	-0.06	-0.03	0.59	-0.01	-0.00	0.02
+ GEN. GOVERNMENT BALANCE	-0.00	0.02	0.01	-0.01	-1.13	-0.03	-0.01	-0.08
+ PRIVATE SAVING	0.05	0.09	0.12	0.11	0.87	0.12	0.07	0.14
= INVESTMENT	0.04	0.07	0.07	0.07	0.33	0.08	0.06	0.08

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A16: IT FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.02	0.03	0.15	0.13	0.08	1.04	0.03	0.12
REAL GNP	0.02	0.03	0.15	0.13	0.08	1.04	0.03	0.12
REAL ABSORPTION	0.01	0.01	0.08	0.07	0.04	1.55	0.01	0.13
CAPITAL STOCK	0.00	0.00	0.01	0.01	0.01	0.08	0.00	0.01
GDP DEFLATOR	0.00	0.00	0.02	0.01	0.01	0.07	0.01	0.01
ABSORPTION INFLATION (% PT)	0.01	0.01	0.02	0.02	0.02	-0.05	0.01	0.00
SHORT-TERM INTEREST RATE (% PT)	0.01	0.01	0.04	0.03	0.02	0.21	0.01	0.03
LONG-TERM INTEREST RATE (% PT)	0.00	0.00	0.01	0.01	0.01	0.07	0.00	0.01
EXCHANGE RATE ($/LOCAL UNIT)*	-0.03	0.00	0.03	0.02	0.01	0.18	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.00	-0.01	-0.04	-0.02	-0.02	0.75	-0.00	0.06
NET FOREIGN ASSETS	0.01	0.01	0.06	0.05	0.03	-0.38	0.01	-0.01
FOREIGN SAVING**	-0.01	-0.01	-0.07	-0.05	-0.03	0.39	-0.01	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.01	0.04	0.02	0.02	0.74	0.00	-0.05
+ PRIVATE SAVING	0.01	0.02	0.07	0.06	0.03	0.56	0.01	0.07
= INVESTMENT	0.01	0.01	0.04	0.03	0.02	0.20	0.01	0.03
90								
REAL GDP	0.04	0.05	0.13	0.13	0.08	1.36	0.04	0.15
REAL GNP	0.04	0.05	0.14	0.14	0.08	1.31	0.04	0.15
REAL ABSORPTION	0.02	0.03	0.08	0.08	0.05	1.88	0.02	0.16
CAPITAL STOCK	0.01	0.01	0.05	0.04	0.03	0.42	0.01	0.05
GDP DEFLATOR	0.03	0.04	0.12	0.10	0.07	0.74	0.03	0.13
ABSORPTION INFLATION (% PT)	0.02	0.02	0.06	0.06	0.04	0.37	0.02	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.02	0.05	0.05	0.03	0.37	0.02	0.05
LONG-TERM INTEREST RATE (% PT)	0.01	0.01	0.03	0.03	0.02	0.22	0.01	0.03
EXCHANGE RATE ($/LOCAL UNIT)*	-0.04	0.00	0.03	0.03	0.02	0.32	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.03	-0.12	-0.07	-0.06	2.30	-0.01	0.16
NET FOREIGN ASSETS	0.02	0.04	0.17	0.15	0.07	-1.06	0.02	-0.02
FOREIGN SAVING**	-0.01	-0.02	-0.06	-0.05	-0.02	0.37	-0.01	0.01
+ GEN. GOVERNMENT BALANCE	0.00	0.01	0.03	0.02	0.02	-0.95	0.00	-0.06
+ PRIVATE SAVING	0.02	0.04	0.10	0.10	0.05	1.19	0.03	0.14
= INVESTMENT	0.02	0.03	0.08	0.07	0.05	0.61	0.03	0.09
93								
REAL GDP	0.03	0.03	0.03	0.05	0.02	0.52	0.02	0.06
REAL GNP	0.03	0.04	0.05	0.06	0.02	0.42	0.02	0.06
REAL ABSORPTION	0.01	0.01	-0.01	0.00	-0.02	1.24	0.00	0.09
CAPITAL STOCK	0.02	0.02	0.05	0.05	0.03	0.56	0.02	0.07
GDP DEFLATOR	0.10	0.11	0.30	0.30	0.21	2.40	0.11	0.42
ABSORPTION INFLATION (% PT)	0.03	0.03	0.07	0.07	0.05	0.49	0.03	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.03	0.07	0.07	0.05	0.43	0.03	0.07
LONG-TERM INTEREST RATE (% PT)	0.02	0.02	0.05	0.05	0.04	0.36	0.02	0.05
EXCHANGE RATE ($/LOCAL UNIT)*	-0.05	0.00	0.04	0.04	0.02	0.37	-0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.06	-0.16	-0.07	0.08	5.31	-0.01	0.37
NET FOREIGN ASSETS	0.03	0.09	0.31	0.26	0.08	-1.97	0.03	-0.05
FOREIGN SAVING**	-0.00	-0.02	-0.06	-0.04	-0.00	0.40	0.00	0.01
+ GEN. GOVERNMENT BALANCE	-0.00	0.01	0.01	-0.01	0.00	-1.41	-0.01	-0.10
+ PRIVATE SAVING	0.03	0.06	0.11	0.12	0.04	1.60	0.04	0.18
= INVESTMENT	0.03	0.05	0.06	0.07	0.04	0.59	0.04	0.09

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A17: CA FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.07	0.04	0.04	0.02	0.04	0.02	0.67	0.08
REAL GNP	0.07	0.04	0.04	0.02	0.04	0.02	0.69	0.08
REAL ABSORPTION	0.03	0.02	0.02	0.01	0.02	0.01	1.45	0.08
CAPITAL STOCK	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.01
GDP DEFLATOR	0.01	0.00	0.01	0.00	0.01	0.00	0.06	0.01
ABSORPTION INFLATION (% PT)	0.02	0.01	0.01	0.01	0.01	0.01	-0.14	0.00
SHORT-TERM INTEREST RATE (% PT)	0.02	0.01	0.01	0.01	0.01	0.01	0.12	0.02
LONG-TERM INTEREST RATE (% PT)	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.01
EXCHANGE RATE ($/LOCAL UNIT)*	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.09	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.01	-0.01	-0.01	-0.00	-0.01	-0.00	0.87	0.02
NET FOREIGN ASSETS	0.03	0.01	0.02	0.01	0.02	0.01	-0.54	-0.00
FOREIGN SAVING**	-0.03	-0.01	-0.02	-0.01	-0.02	-0.01	0.57	0.00
+ GEN. GOVERNMENT BALANCE	0.01	0.01	0.01	0.00	0.01	0.00	-0.86	-0.02
+ PRIVATE SAVING	0.03	0.02	0.02	0.01	0.02	0.01	0.40	0.04
= INVESTMENT	0.01	0.01	0.01	0.01	0.01	0.01	0.11	0.02
90								
REAL GDP	0.08	0.05	0.05	0.04	0.04	0.04	0.97	0.10
REAL GNP	0.08	0.05	0.05	0.04	0.05	0.04	0.93	0.10
REAL ABSORPTION	0.04	0.03	0.03	0.02	0.02	0.02	1.73	0.10
CAPITAL STOCK	0.02	0.01	0.02	0.01	0.01	0.01	0.29	0.03
GDP DEFLATOR	0.06	0.03	0.04	0.02	0.04	0.02	0.49	0.06
ABSORPTION INFLATION (% PT)	0.03	0.02	0.02	0.01	0.02	0.02	0.22	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.02	0.02	0.01	0.02	0.01	0.23	0.03
LONG-TERM INTEREST RATE (% PT)	0.02	0.01	0.01	0.01	0.01	0.01	0.14	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.03	-0.01	-0.01	-0.02	-0.01	-0.01	0.19	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.03	-0.03	-0.03	-0.01	-0.03	-0.01	2.54	0.07
NET FOREIGN ASSETS	0.07	0.04	0.05	0.03	0.04	0.02	-1.47	-0.01
FOREIGN SAVING**	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	0.54	0.00
+ GEN. GOVERNMENT BALANCE	0.01	0.01	0.01	0.00	0.01	0.00	-0.96	-0.03
+ PRIVATE SAVING	0.05	0.04	0.03	0.03	0.03	0.03	0.85	0.07
= INVESTMENT	0.03	0.03	0.03	0.02	0.03	0.02	0.42	0.04
93								
REAL GDP	0.07	0.05	0.03	0.03	0.03	0.03	0.38	0.06
REAL GNP	0.07	0.06	0.04	0.03	0.03	0.03	0.26	0.06
REAL ABSORPTION	0.02	0.02	0.01	0.01	0.00	0.01	1.27	0.07
CAPITAL STOCK	0.04	0.02	0.02	0.02	0.02	0.02	0.41	0.05
GDP DEFLATOR	0.20	0.11	0.11	0.08	0.12	0.09	1.62	0.20
ABSORPTION INFLATION (% PT)	0.05	0.03	0.03	0.03	0.03	0.03	0.34	0.00
SHORT-TERM INTEREST RATE (% PT)	0.05	0.03	0.03	0.02	0.03	0.02	0.26	0.05
LONG-TERM INTEREST RATE (% PT)	0.04	0.02	0.02	0.02	0.02	0.02	0.22	0.04
EXCHANGE RATE ($/LOCAL UNIT)*	-0.02	-0.02	-0.02	-0.03	-0.02	0.03	0.19	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.04	-0.06	-0.06	-0.02	-0.05	0.00	5.41	0.17
NET FOREIGN ASSETS	0.12	0.11	0.11	0.06	0.06	0.03	-2.82	-0.01
FOREIGN SAVING**	-0.02	-0.03	-0.03	-0.01	-0.01	0.00	0.59	0.00
+ GEN. GOVERNMENT BALANCE	-0.00	0.01	0.01	-0.00	0.01	-0.01	-1.28	-0.05
+ PRIVATE SAVING	0.07	0.07	0.05	0.04	0.03	0.05	1.09	0.10
= INVESTMENT	0.05	0.05	0.03	0.03	0.03	0.03	0.40	0.06

* FOR U.S. IS MERM WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

TABLE A18: SI FISCAL SHOCK WITH ADAPTIVE EXPECTATIONS

	U.S.	JAPAN	GERMANY	FRANCE	U.K.	ITALY	CANADA	TOTAL G7
88								
REAL GDP	0.13	0.19	0.67	0.39	0.52	0.32	0.16	0.27
REAL GNP	0.14	0.19	0.66	0.39	0.51	0.32	0.16	0.28
REAL ABSORPTION	0.06	0.09	0.38	0.22	0.30	0.16	0.09	0.14
CAPITAL STOCK	0.01	0.02	0.05	0.03	0.04	0.03	0.01	0.02
GDP DEFLATOR	0.02	0.02	0.06	0.03	0.06	0.03	0.02	0.03
ABSORPTION INFLATION (% PT)	0.04	0.05	0.04	0.03	0.04	0.06	0.02	0.00
SHORT-TERM INTEREST RATE (% PT)	0.03	0.05	0.14	0.09	0.11	0.08	0.04	0.07
LONG-TERM INTEREST RATE (% PT)	0.01	0.02	0.05	0.03	0.04	0.03	0.01	0.02
EXCHANGE RATE ($/LOCAL UNIT)*	-0.05	0.01	0.11	0.05	0.07	0.04	0.00	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.02	-0.04	-0.18	-0.08	-0.13	-0.06	-0.03	-0.05
NET FOREIGN ASSETS	0.05	0.08	0.32	0.18	0.22	0.14	0.08	0.12
FOREIGN SAVING**	-0.05	-0.08	-0.33	-0.18	-0.23	-0.13	-0.08	-0.12
+ GEN. GOVERNMENT BALANCE	0.02	0.04	0.18	0.08	0.13	0.05	0.03	0.06
+ PRIVATE SAVING	0.06	0.09	0.30	0.19	0.22	0.16	0.09	0.13
= INVESTMENT	0.03	0.05	0.16	0.09	0.12	0.08	0.04	0.07
90								
REAL GDP	0.17	0.24	0.55	0.40	0.46	0.38	0.21	0.29
REAL GNP	0.18	0.25	0.59	0.43	0.48	0.40	0.22	0.31
REAL ABSORPTION	0.08	0.14	0.37	0.24	0.29	0.22	0.12	0.17
CAPITAL STOCK	0.05	0.07	0.21	0.13	0.17	0.12	0.06	0.10
GDP DEFLATOR	0.12	0.17	0.44	0.28	0.37	0.26	0.15	0.22
ABSORPTION INFLATION (% PT)	0.07	0.09	0.22	0.17	0.20	0.16	0.09	0.00
SHORT-TERM INTEREST RATE (% PT)	0.07	0.09	0.20	0.14	0.17	0.14	0.07	0.11
LONG-TERM INTEREST RATE (% PT)	0.04	0.05	0.13	0.09	0.10	0.08	0.04	0.07
EXCHANGE RATE ($/LOCAL UNIT)*	-0.08	0.02	0.13	0.07	0.09	0.07	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.07	-0.14	-0.54	-0.22	-0.39	-0.14	-0.10	-0.17
NET FOREIGN ASSETS	0.15	0.24	0.83	0.48	0.55	0.36	0.22	0.33
FOREIGN SAVING**	-0.05	-0.09	-0.29	-0.17	-0.18	-0.12	-0.07	-0.12
+ GEN. GOVERNMENT BALANCE	0.02	0.05	0.16	0.06	0.13	0.02	0.03	0.05
+ PRIVATE SAVING	0.11	0.19	0.42	0.31	0.30	0.31	0.16	0.22
= INVESTMENT	0.07	0.14	0.29	0.20	0.25	0.21	0.12	0.16
93								
REAL GDP	0.12	0.12	0.07	0.13	0.10	0.13	0.10	0.11
REAL GNP	0.14	0.15	0.16	0.18	0.16	0.16	0.11	0.15
REAL ABSORPTION	0.04	0.04	-0.04	0.01	-0.02	0.02	0.02	0.02
CAPITAL STOCK	0.08	0.10	0.21	0.16	0.19	0.15	0.09	0.13
GDP DEFLATOR	0.41	0.51	1.14	0.89	1.02	0.84	0.48	0.66
ABSORPTION INFLATION (% PT)	0.11	0.12	0.22	0.22	0.22	0.20	0.13	0.00
SHORT-TERM INTEREST RATE (% PT)	0.11	0.13	0.22	0.20	0.21	0.19	0.12	0.15
LONG-TERM INTEREST RATE (% PT)	0.08	0.10	0.19	0.16	0.17	0.15	0.09	0.12
EXCHANGE RATE ($/LOCAL UNIT)*	-0.07	0.02	0.11	0.09	0.10	0.08	0.01	0.00
DEVIATION AS % OF BASELINE GNP								
GOVERNMENT DEBT	-0.08	-0.28	-0.78	-0.24	0.60	-0.03	-0.11	-0.24
NET FOREIGN ASSETS	0.25	0.48	1.56	0.86	0.95	0.60	0.35	0.59
FOREIGN SAVING**	-0.04	-0.10	-0.30	-0.15	-0.16	-0.09	-0.05	-0.11
+ GEN. GOVERNMENT BALANCE	-0.00	0.05	0.07	-0.01	0.07	-0.09	-0.01	0.01
+ PRIVATE SAVING	0.14	0.27	0.42	0.37	0.29	0.41	0.21	0.27
= INVESTMENT	0.10	0.21	0.19	0.21	0.20	0.23	0.15	0.18

* FOR U.S. IS MERM-WEIGHTED EFFECTIVE RATE
** EQUALS CURRENT ACCOUNT DEFICIT / BASELINE GDP

MODEL VARIABLES AND EQUATIONS

endogenous variables

mnemonic	definition
a	real domestic absorption
b	private sector holdings of government bonds
c	real consumption expenditure
coil	real consumption of oil
cu	capacity utilization
curball	current account, local currency
curbal	current account, U.S. dollar
er	exchange rate, U.S. $/local currency
ere	expected exchange rate
erea	expected exchange rate (adaptive)
fm	real foreign export markets
gdef	nominal government deficit
gdp	real gross domestic product
ge	total government expenditures
gnp	real gross national product
im	real import volume (excluding oil and commodities)
icom	real import volume of commodities
ioil	real import volume of oil
it	total real import volume
k	real net capital stock
mone	money supply (m1)
nfa	net claims on foreigners, U.S. dollars
p	absorption deflator
pgnp	price level (gnp deflator)
pi	inflation rate
pie	expected inflation rate
piea	expected inflation rate (adaptive)
pim	import prices (excluding oil and commodities)
pima	import prices adjusted for world trade discrepancy
pit	total import price
pfm	price in foreign markets
pxm	export prices (excluding oil)
pxt	total export price
pcom	price of commodities
poil	price of oil
r	average interest rate
reer	real effective exchange rate
rl	long-term nominal interest rate
rle	expected long-term interest rate
rlr	real ex ante long-term interest rate
rr	average real ex post interest rate
rs	short-term nominal interest rate
tax	government tax receipts
trate	tax rate
ucstcap	real user cost of capital
w	real net wealth
xm	real export volume (excluding oil)
xt	total real export volume
xma	real export volume, adjusted for world trade discrepancy
ycap	capacity output (gdp)
yd	real disposable income
wtrade	world trade discrepancy, nominal terms
wtrader	world trade discrepancy, real terms

MODEL VARIABLES AND EQUATIONS

exogenous variables

bratio	target ratio of nominal government debt to gnp
ctrate	corporate tax rate
delta	depreciation rate for the capital stock
dum	switch that makes the tax rate endogenous
g	real government spending on goods and services
gexog	other government spending
mt	target level of the monetary base
pibar	long-run expected inflation
prodoil	real production of oil
txcred	tax credit
xoil	real exports of oil

Model Equations: U.S.

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1:UC      DEL(1 : LOG(US_C)) = UC0+UC1*LOG(US_W(-1)/US_C(-1))+UC2*DEL(1 : US_RLR)+UC3*DEL(1 :
          LOG(US_YD))+RES_US_C

  Consumption of oil :
2:UCOIL   DEL(1 : LOG(US_COIL)) = UCOIL0+UCOIL1*DEL(1 : LOG(US_GDP))+UCOIL2*DEL(1 : LOG(POIL/
          US_PGNP))+UCOIL3*LOG(POIL(-1)/US_PGNP(-1))+UCOIL4*LOG(US_GDP(-1)/US_COIL(-1))+
          RES_US_COIL

  Change in the capital stock :
3:UK      DEL(1 : LOG(US_K)) = UK1*LOG(US_GDP(-1)/US_K(-1))+UK2*DEL(1 : LOG(US_GDP))+UK3*
          US_UCSTCAP+UK0+UK4*DUM74+RES_US_K

  Real gross investment :
4:UINV    US_INVEST = DEL(1 : US_K)+US_DELTA*US_K(-1)+RES_US_INVEST

5:UXM     LOG(US_XM) = UX0+UX1*LOG(US_FM)+UX2*US_REER+UX3*US_REER(-1)+UX4*T+RES_US_XM

  Man. exports - real, adjusted for real world trade discrepancy :
6:UXA     US_XMA = US_XM+T1*WTRADER

  Total exports :
7:UXT     US_XT = US_XMA+US_XOIL+RES_US_XT

8:UIM     LOG(US_IM) = UI0+UI1*LOG(US_A)+UI2*LOG(US_A(-1))+UI3*LOG(US_PIMA/US_PGNPNO)+UI4*T+UI5*
          LOG(US_PIMA(-1)/US_PGNPNO(-1))+RES_US_IM

  Imports of oil :
9:UIOIL   US_IOIL = US_COIL+US_XOIL-US_PRODOIL+RES_US_IOIL

10:UIC    DEL(1 : LOG(US_ICOM)) = UIC0+UIC2*DEL(1 : LOG(PCOM/US_ER/US_PGNP))+UIC1*DEL(1 : LOG(
          US_GDP))+UIC3*LOG(PCOM(-1)/US_ER(-1)/US_PGNP(-1))+UIC4*LOG(US_GDP(-1))+UIC5*LOG(
          US_ICOM(-1))+RES_US_ICOM

  Total Imports :
11:UIT    US_IT = US_IM+US_IOIL+US_ICOM+RES_US_IT

  Definition of domestic absorption :
12:UA     US_A = US_C+US_INVEST+US_G+RES_US_A

  Real GDP identity :
13:UGDP   US_GDP = US_A+US_XT-US_IT+RES_US_GDP

  Definition of real GNP :
14:UGNP   US_GNP = US_GDP+US_R*US_NFA(-1)/US_PGNP+RES_US_GNP

15:UNNP   US_NNP = US_GDP-US_DELTA*US_K(-1)

16:UNNPC  US_NNPCAP = US_YCAP-US_DELTA*US_K(-1)

17:UW     US_W = ULAMBDAM*US_M/US_P+(1-ULAMBDAB)*US_B/US_P+0.5*(1+SUM(I = -3 TO  1 : US_RL(I)/3)
          /US_RL)*US_NFA/US_ER/US_P+(US_NNPCAP-US_TAX/US_P*(1-ULAMBDAB))*(1-UGBAR)*URHOBAR*(1/
          URHOBAR+(US_(U+0.01-1)/(US_RLR+UW1)+(US_PGNP/US_P/URHOBAR-1)/(US_RLR+UW2)-ULAMBDAB*((
          US_G*US_P+US_GEXOG)/(US_NNP*US_PGNP)-UGBAR)/(1-UGBAR)/(US_RLR+UW3))+RES_US_W

  Real disposable income :
18:UYD    US_YD = US_GDP*US_PGNP/US_P-US_DELTA*US_K(-1)-US_TAX/US_P+US_R*(US_B(-1)+US_NFA(-1))/
          US_P-(1-ULAMBDAB)*DEL(1 : US_B)/US_P

  II. Government Sector

  Total government expenditures - nominal :
19:UGE    US_GE = US_P*US_G+US_R*US_B(-1)+US_GEXOG

  Government tax receipts :
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20:UTAX   US_TAX = US_TRATE*(US_PGNP*US_GNP-US_DELTA*US_K(-1)*US_P+US_R*US_B(-1))+RES_US_TAX

   Average tax rate (reaction function) :
21:UTRATE DEL(1 : US_TRATE) = (+TAU1)*DUM*(US_B(-1)/US_PGNP(-1)/US_GNP(-1)-US_BRATIO)+TAU2*DUM*
          DEL(1 : US_B(-1)/US_PGNP(-1)/US_GNP(-1))+RES_US_TRATE

   Government balance sheet identity (solves for government debt) :
22:UB     DEL(1 : US_B)+DEL(1 : US_M) = US_R*US_B(-1)+(US_P*US_G-US_TAX+US_GEXOG)+RES_US_B

   Definition of nominal government deficit :
23:UGDEF  US_GDEF = DEL(1 : US_B+US_M)

   III. Money and Interest Rates

   Money supply (M1) :
24:UM     LOG(US_M/US_P) = UM0+UM1*LOG(US_GNP)+UM2*US_RS+UM3*US_RS(-1)+UM4*LOG(US_M(-1)/US_P(-1)
          )+RES_US_M

   Money demand function (M1) :
25:URS    DEL(1 : US_RS) = UR1*(((1-UM4)*LOG(US_MT/US_P)-UM1*LOG(US_GNP)-UM0-RES_US_M)/(UM2+UM3)
          -US_RS(-1))+RES_US_RS

   Average interest rate - lagged, annual rate :
26:UR     US_R = 0.5*US_RS(-1)/100+0.5*SUM(I = -3 TO -1 : US_RL(I)/100)/3

27:URL    US_RL = (1-ADAP)*(US_RS+100*(US_RL(1)/US_RL-1))+ADAP*(0.33*US_RS+0.67*US_RL(-1))+
          RES_US_RL

   Real long term interest rate (ex ante) :
28:URLR   US_RLR = (1+US_RL/100)/(1+0.1*US_PIE+0.9*US_PIBAR)-1

29:URSR   US_RSR = (1+US_RS/100)/(1+US_PIE)-1

30:URR    US_RR = 0.8*US_RSR(-1)+0.2*SUM(I = -3 TO -1 : US_RLR(I))/3

   Real user cost of capital :
31:UUCST  US_UCSTCAP = (US_DELTA+(1-US_CTRATE)*US_RL/100-0.1*US_PIE-0.9*US_PIBAR)*(1-US_IXCRED-
          US_CTRATE*0.2/(US_RL/100+0.2))/(1-US_CTRATE)

   IV. Prices and Supply

   Price level (GNP deflator) :
32:UPGNP  DEL(1 : LOG(US_PGNPNO)) = UP0+UP1*(0.5*LOG(US_CU*0.01)+0.5*LOG(US_CU(-1)*0.01))+(1-UP2
          )*DEL(1 : LOG(US_PGNPNO(-1)))+UP2*US_PIE+RES_US_PGNPNO

33:UPNO   US_PGNPNO = (US_GDP*US_PGNP-US_PRODOIL*POIL)/(US_GDP-US_PRODOIL)

   Nominal GNP identity (solves for absorption deflator) :
34:UP     US_PGNP*US_GNP = US_P*US_A+US_XT*US_PXT-US_IT*US_PIT+US_R*US_NFA(-1)+RES_US_P

   Inflation rate (absorption deflator) - annual rate :
35:UPI    US_PI = US_P/US_P(-1) - 1

36:UPFM   LOG(US_PFM) = X12+LOG(JA_PGNPNO*JA_ER/JEB0)+X13*LOG(GR_PGNPNO*GR_ER/GEB0)+X14*LOG(
          FR_PGNPNO*FR_ER/FEB0)+X15*LOG(UK_PGNPNO*UK_ER/KEB0)+X16*LOG(IT_PGNPNO*IT_ER/IEB0)+X17*
          LOG(CA_PGNPNO*CA_ER/CEB0)+X18*LOG(SI_PGNPNO*SI_ER/SEB0)+X19*LOG(DC_PGNP*RW_ER/REB0)

37:UPIE   US_PIE = US_PI(1)+ADAP*(US_PIEA-US_PI(1))

38:UPIEA  US_PIEA = US_PIEA(-1)+ETAP*(US_PI-US_PIEA(-1))+RES_US_PIEA

   Non-fuel export prices :
39:UPXM   DEL(1 : LOG(US_PXM)) = UPXM0+UPXM1*DEL(1 : LOG(US_PGNPNO))+(1-UPXM1)*DEL(1 : LOG(
          US_PFM))+UPXM2*LOG(US_PGNPNO(-1)/US_PXM(-1))+UPXM3*LOG(US_PFM(-1)/US_PXM(-1))+UPXM4*T+
          RES_US_PXM
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   Total exports price :
40:UPXT    US_PXT = (US_XMA*US_PXM*POIL*US_XOIL)/US_XT

   Manufactured import prices :
41:UPIM    US_PIM = S11*US_PXM+S21*JA_PXM*JA_ER/JE80+S31*GR_PXM*GR_ER/GE80+S41*FR_PXM*FR_ER/FE80+
           S51*UK_PXM*UK_ER/KE80+S61*IT_PXM*IT_ER/IE80+S71*CA_PXM*CA_ER/CE80+S81*SI_PXM*SI_ER/
           SE80+S91*RW_PXM*RW_ER/RE80+RES_US_PIM

   Import prices-adjusted for (nominal) world trade discrepancy :
42:UPIMA   US_PIMA = US_PIM+T1*WTRADE/US_IM

   Total imports price :
43:UPIT    US_PIT = (US_IM*US_PIMA+US_IOIL*POIL+US_ICOM*PCOM)/US_IT

   Production function (capacity output) :
44:UYCAP   LOG(US_YCAP) = UYC0+LOG(1+UN)*T*(1-UBETA)+LOG(US_K(-1))*UBETA+RES_US_YCAP

   Capacity utilization :
45:UCU     US_CU = 100*US_GDP/US_YCAP

   V. International Accounts

   Balance of payments (claims on foreigners), current $ :
46:UNFA    DEL(1 : US_NFA) = US_XT*US_PXT-(US_IM*US_PIMA+US_IOIL*POIL+US_ICOM*PCOM)+US_R*US_NFA(
           -1)+RES_US_NFA

   Current account - current dollar :
47:UCAB    US_CURBAL = DEL(1 : US_NFA)

48:UER     US_ER = 1

   Competitiveness of Man. exports :
49:UREER   US_REER = (-W11)*LOG(US_PXM)+(-W12)*LOG(JA_PXM*JA_ER/JE80)+(-W13)*LOG(GR_PXM*GR_ER/
           GE80)+(-W14)*LOG(FR_PXM*FR_ER/FE80)+(-W15)*LOG(UK_PXM*UK_ER/KE80)+(-W16)*LOG(IT_PXM*
         * IT_ER/IE80)+(-W17)*LOG(CA_PXM*CA_ER/CE80)+(-W18)*LOG(SI_PXM*SI_ER/SE80)+(-W19)*LOG(
           RW_PXM*RW_ER/RE80)

50:UMERM   US_MERM = EXP((-V12)*LOG(JA_ER/JE80)+(-V13)*LOG(GR_ER/GE80)+(-V14)*LOG(FR_ER/FE80)+(-
           V15)*LOG(UK_ER/KE80)+(-V16)*LOG(IT_ER/IE80)+(-V17)*LOG(CA_ER/CE80)+(-V18)*LOG(SI_ER/
           SE80))

   Foreign export markets for manufact. (using fixed shares) :
51:UFM     US_FM = S11*US_IM+S12*(JA_IM*JE80)+S13*(GR_IM*GE80)+S14*(FR_IM*FE80)+S15*(UK_IM*KE80)+
           S16*(IT_IM*IE80)+S17*(CA_IM*CE80)+S18*(SI_IM*SE80)+S19*(RW_IM*RE80)
```

Model Equations: Developing Countries

```
423:DCTOT  DEL(1 : LOG(DC_CTOT)) = DC0+DC1*DEL(1 : LOG(DC_GDP*DC_NFA*US_R-DC_DELTA*DC_K(-1))+(
           DC_DEBT-DC_DEBT(-1))/DC_P/RW_ER))+DC2*LOG(DC_GDP(-1)+DC_NFA(-1)*US_R(-1)-DC_DELTA(-1)*
           DC_K(-2)+DEL(1 : DC_DEBT(-1))/DC_P(-1)/RW_ER(-1))+DC3*LOG(DC_CTOT(-1))+RES_DC_CTOT

424:DINV   DC_INVEST = DC_GDP-(DC_XM+DC_XCOM+DC_XOIL)-DC_CTOT+DC_IT

425:DINVC  DC_INVESTC = RES_DC_INVESTC+(IF PCOM/RW_ER/RW_PXM LT 1 THEN DC_DELTA*DC_KC(-1) ELSE
           DC_KCOMSHR*DC_INVEST)

426:DKC    DC_KC = DC_KC(-1)*(1-DC_DELTA)+DC_INVESTC

427:DK     DC_K = DC_KC+DC_KM

428:DINVM  DC_INVESTM = DC_INVEST-DC_INVESTC

429:DKM    DC_KM = DC_KM(-1)*(1-DC_DELTA)+DC_INVESTM

430:DXM    DC_XM = RW_XM-NO_XM

431:DXMA   DC_XMA = RW_XMA-NO_XM
```

```
432:DXC     DC_XCOM = RW_XCOM+NO_ICOM

433:DXOIL   DC_XOIL = DC_XOILSHR*(RW_XOIL-DC_IOIL)+RES_DC_XOIL

434:DXT     DC_XT = DC_XCOM+DC_XOIL+DC_XMA

435:DIOIL   DC_IOIL = DC_OILSHR*DC_IT+RES_DC_IOIL

436:DIT     DC_IT = DC_IM+DC_IOIL

437:DA      DC_A = DC_CTOT+DC_INVEST

438:DGDP    DC_GDP = DC_XM+DC_XCOM+DC_XOIL+DC_QNT

439:DQNT    DEL(1 : DC_QNT) = RQNTO*DEL(1 : DC_CTOT)+RES_DC_QNT

440:DNNPC   DC_NNPCAP = DC_VCAP-DC_DELTA*DC_K(-1)

441:DW      DC_W = DC_NFA/RW_ER/DC_P+DC_NNPCAP*DRHOBAR*(1/URRBAR+(DC_GDP/DC_VCAP*0.01-1)/(URRBAR+
            DW1)+(DC_PGNP/DC_P/DRHOBAR-1)/(URRBAR+DW2)-(US_RSR-URRBAR)/(URRBAR+UW3))

442:DP      DC_P = (DC_PXM*DC_QNT+DC_PIT*DC_IT)/(DC_CTOT+DC_INVEST)

443:DPGNP   DC_PGNP = (DC_PXM*(DC_QNT+DC_XMA)+PCOM/RW_ER*DC_XCOM+POIL/RW_ER*DC_XOIL)/DC_GDP+
            RES_DC_PGNP

444:DPXM    DEL(1 : RW_REER) = RPXM1*RW_REER(-1)+RPXM2*LOG(DC_XSM/DC_XM)+RES_DC_PXM

445:RPFM    LOG(RW_PFM) = X91*LOG(US_PGNPNO)+X92*LOG(JA_PGNPNO*JA_ER/JE80)+X93*LOG(GR_PGNPNO*GR_ER
            /GE80)+X94*LOG(FR_PGNPNO*FR_ER/FE80)+X95*LOG(UK_PGNPNO*UK_ER/KE80)+X96*LOG(IT_PGNPNO*
            IT_ER/IE80)+X97*LOG(CA_PGNPNO*CA_ER/CE80)+X98*LOG(SI_PGNPNO*SI_ER/SE80)+X99*LOG(RW_ER/
            RE80)

446:PCOM    LOG(DC_XCOM) = RXCOM1*LOG(DC_KC(-1))+RES_PCOM

447:DPXT    DC_PXT = (DC_PXM*DC_XMA+PCOM/RW_ER*DC_XCOM+POIL/RW_ER*DC_XOIL)/DC_XT

448:DPIM    DC_PIM = RW_PIM+RES_DC_PIM

449:DPIMA   DC_PIMA = RW_PIMA+RES_DC_PIMA

450:DPIT    DC_PIT = (DC_PIMA*DC_IM+POIL/RW_ER*DC_IOIL)/DC_IT

451:DXSM    LOG(DC_XSM) = RXSM1*LOG(DC_KM(-1))+RES_DC_XSM

452:DVCAP   DC_VCAP = EXP(DVCAP0+LOG(1+DN)*T+(1-DBETA)*LOG(DC_K(-1))*DBETA)

453:DASSET  DEL(1 : DC_ASSETS) = DASS1*(RW_ER*DC_XT*DC_PXT+US_R*DC_NFA(-1)+DEL(1 : DC_DEBT))-DASS2
            *(DC_ASSETS(-1)-DC_IT(-1)*DC_PIT(-1)*RW_ER(-1)*DC_ASSETRAT)+RES_DC_ASSETS*RW_ER

454:DNFA    DC_NFA = DC_NFA(-1)-DEL(1 : DC_NETDEBT)+RES_DC_NFA

455:DDEBT   DEL(1 : DC_DEBT) = ((((1-ADAP)*(DC_XT(4)*DC_PXT(4)*RW_ER(4))+ADAP*(DC_XT*DC_PXT*RW_ER)
            )/(DC_XT(-1)*DC_PXT(-1)*RW_ER(-1)))**(1/5)-1)*DC_XT(-1)*DC_PXT(-1)*RW_ER(-1)*DDEBT1+
            DDEBT2*(ISR*DC_PXT(-1)*DC_XT(-1)*RW_ER(-1)/US_RRBAR(-1)-DC_NETDEBT(-1))+DDEBT2/10*(ISR
            *DC_XTNOMIST(-1)/US_RR(-1)-DC_NETDEBT(-1))+RES_DC_DEBT

456:DNDEBT  DC_NETDEBT = DC_DEBT-DC_ASSETS

457:DCAB    DEL(1 : DC_NFA)/RW_ER = DC_PXM*DC_XMA+PCOM/RW_ER*DC_XCOM+POIL/RW_ER*DC_XOIL-DC_PIT*
            DC_IT+US_R*DC_NFA(-1)/RW_ER+RES_DC_IT
```

Model Equations: High Income Oil Exporters

```
458:NXOIL   NO_XOIL = RW_XOIL-DC_XOIL

459:NXT     NO_XT = NO_XOIL+NO_XM
```

```
460:HIC     DEL(1 : LOG(HO_ICOM)) = HIC0+HIC2*DEL(1 : LOG(PCOM/RW_ER/RW_PXM))+HIC1*DEL(1 : LOG(
            HO_GDP))+RES_HO_ICOM

461:HIM     LOG(HO_IM)-LOG(HO_A) = HI0+HI1*LOG(DC_PIMA/DC_PGNP)+HI2*(LOG(HO_IM(-1))-LOG(HO_A(-1)))
            +RES_HO_IM

462:HIT     HO_IT = HO_IM+HO_IOIL+HO_ICOM

463:HA      HO_A = HO_GDP-HO_XT+HO_IT

464:HGDP    HO_GDP = HO_XT+HO_QNT

465:HQNT    DEL(1 : HO_QNT) = HQNT0*DEL(1 : HO_A)+RES_HO_QNT

466:HPXT    HO_PXT = (RW_PXM*HO_XM+POIL/RW_ER*HO_XOIL)/HO_XT+RES_HO_PXT

467:HPIT    HO_PIT = (RW_PIMA*HO_IM+POIL/RW_ER*HO_IOIL+PCOM/RW_ER*HO_ICOM)/HO_IT+RES_HO_PIT

468:HNFA    DEL(1 : HO_NFA)/RW_ER = HO_PXT*HO_XT-HO_IT*HO_PIT+US_R*HO_NFA(-1)/RW_ER+RES_HO_NFA

469:RXM     LOG(RW_XM) = RX0+RX1*LOG(RW_FM)+RX2*RW_REER+RX3*T+RES_RW_XM
```

Model Equations: Rest of World

```
    Export volume, adjusted for world trade discrepancy :
470:RXA     RW_XMA = RW_XM*T9*WTRADER/RE80

    Export prices, manufactures :
471:RPX     RW_PXM = DC_PXM*RES_RW_PXM

    Import prices, manufactures :
472:RPIM    RW_PIM = (S19*US_PXM+S29*(JA_PXM*JA_ER/JE80)+S39*GR_PXM*GR_ER/GE80+S49*FR_PXM*FR_ER/
            FE80+S59*UK_PXM*UK_ER/KE80+S69*IT_PXM*IT_ER/IE80+S79*CA_PXM*CA_ER/CE80+S89*SI_PXM*
            SI_ER/SE80+S69*RW_PXM*RW_ER/RE80)/(RW_ER/RE80)+RES_RW_PIM

    Import prices, adjusted for nominal world trade discrepancy
    :
473:RPIMA   RW_PIMA = RW_PIM*T9*WTRADE/RW_ER/RW_IM

    Competitiveness in manufacturing :
474:RREER   RW_REER = (-W91)*LOG(US_PXM)+(-W92)*LOG(JA_PXM*JA_ER/JE80)+(-W93)*LOG(GR_PXM*GR_ER/
            GE80)+(-W94)*LOG(FR_PXM*FR_ER/FE80)+(-W95)*LOG(UK_PXM*UK_ER/KE80)+(-W96)*LOG(IT_PXM*
            IT_ER/IE80)+(-W97)*LOG(CA_PXM*CA_ER/CE80)+(-W98)*LOG(SI_PXM*SI_ER/SE80)+(-W99)*LOG(
            RW_PXM*RW_ER/RE80)

475:RNEER   RW_NEER = EXP((-W92)*LOG(JA_ER/JE80)+(-W93)*LOG(GR_ER/GE80)+(-W94)*LOG(FR_ER/FE80)+(-
            W95)*LOG(UK_ER/KE80)+(-W96)*LOG(IT_ER/IE80)+(-W97)*LOG(CA_ER/CE80)+(-W98)*LOG(SI_ER/
            SE80)+(-W99)*LOG(RW_ER/RE80))

    Foreign demand for manufactures (using fixed shares) :
476:RFM     RW_FM = (S91*US_IM+S92*(JA_IM*JE80)+S93*(GR_IM*GE80)+S94*(FR_IM*FE80)+S95*(UK_IM*KE80)
            +S96*(IT_IM*IE80)+S97*(CA_IM*CE80)+S98*(SI_IM*SE80)+S99*(RW_IM*RE80))/RE80

477:RIM     RW_IM = DC_IM+HO_IM

    EXPORTS OF OIL :
478:RXOIL   RW_XOIL = (-(US_XOIL-US_IOIL+(JA_XOIL-JA_IOIL)*JE80+(GR_XOIL-GR_IOIL)*GE80+(FR_XOIL-
            FR_IOIL)*FE80+(UK_XOIL-UK_IOIL)*KE80+(IT_XOIL-IT_IOIL)*IE80+(CA_XOIL-CA_IOIL)*CE80+(
            SI_XOIL-SI_IOIL)*SE80))/RE80+DC_IOIL+HO_IOIL

479:RXCOM   RW_XCOM = US_ICOM+JA_ICOM*JE80+GR_ICOM*GE80+FR_ICOM*FE80+UK_ICOM*KE80+IT_ICOM*IE80+
            CA_ICOM*CE80+SI_ICOM*SE80

    Total export volume :
480:        RW_XT = DC_XT+HO_XT-HO_ICOM

    Total import volume :
481:RIT     RW_IT = DC_IT+HO_IT-HO_ICOM
```

```
    Total exports price :
482:RPXT    RW_PXT = (HO_XT*HO_PXT+DC_PXT*DC_XT-HO_ICOM*PCOM)/RW_XT

    Total imports price :
483:RPIT    RW_PIT = (HO_IT*HO_PIT+DC_PIT*DC_IT-HO_ICOM*PCOM)/RW_IT

    ******************
    WORLD TRADE ADDING UP
    ******************

    Nominal World Trade discrepancy :
484:WTRADE WTRADE = US_XMA*US_PXM-US_IM*US_PIM+(JA_XMA*JA_PXM-JA_IM*JA_PIM)*JA_ER+(GR_XMA*GR_PXM-
           GR_IM*GR_PIM)*GR_ER+(FR_XMA*FR_PXM-FR_IM*FR_PIM)*FR_ER+(UK_XMA*UK_PXM-UK_IM*UK_PIM)*
           UK_ER+(IT_XMA*IT_PXM-IT_IM*IT_PIM)*IT_ER+(CA_XMA*CA_PXM-CA_IM*CA_PIM)*CA_ER+(SI_XMA*
           SI_PXM-SI_IM*SI_PIM)*SI_ER+(RW_XMA*RW_PXM-RW_IM*RW_PIM)*RW_ER+RES_WTRADE

    Real World Trade discrepancy :
485:WTRDR   WTRADER = US_IM-US_XM+(JA_IM-JA_XM)*JE80+(GR_IM-GR_XM)*GE80+(FR_IM-FR_XM)*FE80+(UK_IM-
           UK_XM)*KE80+(IT_IM-IT_XM)*IE80+(CA_IM-CA_XM)*CE80+(SI_IM-SI_XM)*SE80+(RW_IM-RW_XM)*
           RE80+RES_WTRADER

486:POIL    POIL = RPOIL*(US_PGNP**UWT*(JA_PGNP*JA_ER/JE80)**JWT*(GR_PGNP*GR_ER/GE80)**GWT*(
           FR_PGNP*FR_ER/FE80)**FWT*(UK_PGNP*UK_ER/KE80)**KWT*(IT_PGNP*IT_ER/IE80)**IWT*(CA_PGNP*
           CA_ER/CE80)**CWT*(SI_PGNP*SI_ER/SE80)**SWT)
```

COEFFICIENT VALUES

INTER20 -

ADAP	1.	CBETA	0.33	CCOIL0	-0.102414
CCOIL1	0.980737	CCOIL2	-0.138345	CCOIL3	-0.049228
CCOIL4	0.082168	CC0	-0.4736	CC1	0.1119
CC2	-0.2217	CC3	0.5141	CC4	0.
CC5	0.07338	CE80	0.855369	CGBAR	0.21678
CIC0	-3.4714	CIC1	1.0424	CIC2	-0.4044
CIC3	-0.4044	CIC4	0.6924	CIC5	0.
CI0	-2.1406	CI1	1.6426	CI2	-0.6426
CI3	-0.3088	CI4	0.0302	CI5	-0.2
CI6	0.	CKCOMSHR	0.05	CK0	0.104782
CK1	0.156326	CK2	0.08606	CK3	-0.084767
CK4	-0.011731	CLAMBDAB	1.	CLAMBDAM	1.
CM0	-0.260774	CM1	0.174	CM2	-0.0083
CM3	0.	CM4	0.853	CM5	0.
CN	0.030708	CPXM0	0.035117	CPXM1	0.666755
CPXM2	0.158678	CPXM3	0.097255	CPXM4	-0.004051
CPX0	-0.247802	CPX1	0.438057	CP0	0.00171
CP1	0.15316	CP2	0.31541	CP3	0.606384
CP4	0.017561	CRHOBAR	1.	CRLBAR	0.016
CRRBAR	0.01711	CR1	1.	CWT	0.06232
CW1	0.281	CW2	0.083	CW3	0.12
CW4	0.23572	CX0	-0.0538	CX1	1.
CX2	-0.4234	CX3	-0.1496	CX4	-0.0024
CYC0	4.34253	DASS1	0.3	DASS2	0.3
DBETA	0.393728	DCXRP	1.	DCXR0	1.
DC0	-0.433787	DC1	0.366304	DC2	0.372915
DC3	-0.318357	DDEBT1	0.6	DDEBT2	0.15
DN	0.045389	DRHOBAR	1.	DUM	1.
DW1	0.281067	DW2	0.38192	DYCAP0	3.73926
DYCAP0	3.73926	ELASI	-1.	ELASX	-1.2
ETA	0.3	ETAE	0.3	ETAP	0.3
ETAR	0.3	FBETA	0.33	FCOIL0	-0.352598
FCOIL1	2.36108	FCOIL2	-0.082261	FCOIL3	-0.049228
FCOIL4	0.082168	FC0	-0.4568	FC1	0.1119
FC2	-0.2217	FC3	0.5141	FC4	0.
FC5	0.07338	FE80	0.236981	FGBAR	0.21678
FIC0	-1.9796	FIC1	1.0424	FIC2	-0.4044
FIC3	-0.4044	FIC4	0.6924	FIC5	0.
FI0	-2.1821	FI1	1.3207	FI2	-0.3207
FI3	0.0576	FI4	0.0198	FI5	-0.7196
FI6	0.	FKCOMSHR	0.05	FK0	0.104782
FK1	0.156326	FK2	0.08606	FK3	-0.084767
FK4	0.011731	FLAMBDAB	1.	FLAMBDAM	1.
FM0	-0.260774	FM1	0.174	FM2	-0.0083
FM3	0.	FM4	0.853	FM5	0.
FN	0.030708	FPXM0	-0.11588	FPXM1	0.457771
FPXM2	0.169534	FPXM3	0.103908	FPXM4	-0.002412
FPX0	-0.247802	FPX1	0.438057	FP0	0.00085
FP1	0.15316	FP2	0.38312	FP3	0.606384
FP4	0.017561	FRHOBAR	1.	FRLBAR	0.016
FRRBAR	0.01711	FR1	1.	FWT	0.06232
FW1	0.281	FW2	0.083	FW3	0.12
FW4	0.23572	FX0	1.4313	FX1	1.
FX2	-0.2	FX3	-0.2072	FX4	-0.008
FYC0	4.34253	GBETA	0.2812	GCOIL0	-0.310099
GCOIL1	1.42987	GCOIL2	-0.133889	GCOIL3	-0.049228
GCOIL4	0.082168	GC0	-0.4694	GC1	0.1119
GC2	-0.2217	GC3	0.5141	GC4	0.
GC5	0.07338	GE80	0.55113	GGBAR	0.22475
GIC0	-1.9503	GIC1	1.0424	GIC2	-0.4044
GIC3	-0.4044	GIC4	0.6924	GIC5	0.
GI0	-2.1396	GI1	0.8623	GI2	0.1377
GI3	-0.7651	GI4	0.0312	GI5	0.

GI6	0.
GK2	0.08606
GLAMBDAB	1.
GM1	0.174
GM4	0.853
GPXM0	-0.035217
GPXM3	0.047329
GPX1	0.107026
GP2	0.56518
GRHOBAR	1.
GR1	1.
GW2	0.083
GX0	0.6513
GX3	-0.2802
HIC0	-0.00556
HI0	-0.128298
HI3	0.368385
HI6	-0.06445
ICOIL0	-0.285591
ICOIL3	-0.049228
IC1	0.1119
IC4	0.
IGBAR	0.21678
IIC2	-0.4044
IIC5	0.
II2	-0.6311
II5	-0.4708
IK0	0.104782
IK3	-0.084767
ILAMBDAM	1.
IM2	-0.0083
IM5	0.
IPXM1	0.639554
IPXM4	-0.018843
IP0	-0.0027
IP3	0.606384
IRLBAR	0.016
ISR	0.03
IW2	0.083
IX0	-0.4357
IX3	-0.2813
JBETA	0.431
JCOIL2	-0.037143
JC0	-0.461
JC1	0.5141
JE80	4.42825
JIC1	1.0424
JIC4	0.6924
JI1	1.
JI4	0.0307
JK0	0.165885
JK3	-0.084767
JLAMBDAM	1.
JM2	-0.0083
JM5	0.
JPXM1	0.525026
JPXM4	-0.012654
JP0	0.00012
JP3	0.494025
JRLBAR	0.016
JWT	0.137909
JW3	0.12
JX1	1.
JX4	0.0255
KCOIL0	-0.316596
KCOIL3	-0.049228
GK0	0.192427
GK3	-0.084767
GLAMBDAM	1.
GM2	-0.0083
GM5	0.
GPXM1	0.812986
GPXM4	0.000138
GP0	0.00332
GP3	0.600277
GRLBAR	0.016
GWT	0.106169
GW3	0.12
GX1	1.
GX4	-0.0101
HIC1	1.39156
HI1	-1.26772
HI4	0.
HQNT0	0.25
ICOIL1	0.956755
ICOIL4	0.082168
IC2	-0.2217
IC5	0.07338
IIC0	-2.305
IIC3	-0.4044
II0	-1.9044
II3	-0.0454
II6	0.
IK1	0.156326
IK4	-0.011731
IM0	-0.260774
IM3	0.
IN	0.030708
IPXM2	0.642631
IPX0	-0.247802
IP1	0.15316
IP4	0.017561
IRRBAR	0.01711
IWT	0.06232
IW3	0.12
IX1	1.
IX4	0.0032
JCOIL0	-0.310547
JCOIL3	-0.049228
JC1	0.1119
JC4	0.
JGBAR	0.11539
JIC2	-0.4044
JIC5	0.
JI2	0.
JI5	-0.2095
JK1	0.156326
JK4	-0.011731
JM0	-0.295291
JM3	0.
JN	0.057664
JPXM2	0.42337
JPX0	-0.192358
JP1	0.15316
JP4	0.017561
JRRBAR	0.00923
JW1	0.281
JW4	0.23572
JX2	-0.5622
JYC0	2.12461
KCOIL1	1.521
KCOIL4	0.082168
GK1	0.156326
GK4	-0.011731
GM0	-0.285193
GM3	0.
GN	0.028079
GPXM2	0.077221
GPX0	0.002474
GP1	0.15316
GP4	0.017561
GRRBAR	0.02591
GW1	0.281
GW4	0.23572
GX2	-0.2309
GYC0	4.55175
HIC2	-1.0349
HI2	0.745933
HI5	-0.686291
IBETA	0.33
ICOIL2	-0.078609
IC0	-0.4627
IC3	0.5141
IE80	1.16983
IIC1	1.0424
IIC4	0.6924
II1	1.6311
II4	0.0124
IKCOMSHR	0.05
IK2	0.08606
ILAMBDAB	1.
IM1	0.174
IM4	0.853
IPXM0	0.523501
IPXM3	0.393871
IPX1	0.438057
IP2	0.41503
IRHOBAR	1.
IR1	1.
IW1	0.281
IW4	0.23572
IX2	-0.2
IYC0	4.34253
JCOIL1	1.43846
JCOIL4	0.082168
JC2	-0.2217
JC5	0.07338
JIC0	-2.4911
JIC3	-0.4044
JI0	-3.1835
JI3	-0.6074
JI6	0.
JK2	0.08606
JLAMBDAB	1.
JM1	0.174
JM4	0.853
JPXM0	0.66729
JPXM3	0.259485
JPX1	0.409839
JP2	0.49307
JRHOBAR	1.
JR1	1.
JW2	0.083
JX0	-2.0314
JX3	-0.4434
KBETA	0.33
KCOIL2	-0.042643
KC0	-0.4725

KC1	0.1119	KC2	-0.2217	KC3	0.5141
KC4	0.	KC5	0.07338	KE80	2.32628
KGBAR	0.21678	KIC0	-2.791	KIC1	1.0424
KIC2	-0.4044	KIC3	-0.4044	KIC4	0.6924
KIC5	0.	KI0	-2.1031	KI1	0.8035
KI2	0.1965	KI3	-0.5	KI4	0.0283
KI5	0.	KI6	0.	KKCOMSHR	0.05
KK0	0.104782	KK1	0.156326	KK2	0.08606
KK3	-0.084767	KK4	-0.011731	KLAMBDAB	1.
KLAMBDAM	1.	KM0	-0.260774	KM1	0.174
KM2	-0.0083	KM3	0.	KM4	0.853
KM5	0.	KN	0.030708	KPXM0	0.278808
KPXM1	0.740725	KPXM2	0.374224	KPXM3	0.229363
KPXM4	-0.003277	KPX0	-0.247802	KPX1	0.438057
KP0	7.600000E-05	KP1	0.15316	KP2	0.46778
KP3	0.606384	KP4	0.017561	KRHOBAR	1.
KRLBAR	0.016	KRRBAR	0.01711	KR1	1.
KW1	0.06232	KW1	0.281	KW2	0.083
KW3	0.12	KW4	0.23572	KX0	-0.4993
KX1	1.	KX2	-0.2	KX3	-0.1765
KX4	-0.0288	KYC0	4.34253	LBETA	0.33
LCOIL0	-0.666048	LCOIL1	2.00012	LCOIL2	-0.041001
LCOIL3	-0.050163	LCOIL4	0.074362	LC0	-0.477554
LC1	0.135126	LC2	-0.130686	LC3	0.604057
LC4	0.	LC5	0.07338	LE80	1.
LGBAR	0.21678	LIC0	0.687478	LIC1	2.40126
LIC2	-0.515604	LIC3	-0.179167	LIC4	0.151221
LIC5	-0.594397	LI0	-0.469386	LI1	0.321345
LI2	0.	LI3	-0.541075	LI4	0.
LI5	0.	LI6	0.678655	LKCOMSHR	0.05
LK1	0.09021	LK2	0.5985	LK3	0.
LK4	-0.05682	LLAMBDAB	1.	LLAMBDAM	1.
LM1	1.	LM3	-3.	LM5	0.
LN	0.030708	LPXM0	-0.007987	LPXM1	0.578383
LPXM2	0.090117	LPX0	-0.247802	LPX1	0.438057
LP0	-0.000925	LP1	0.105728	LP2	0.220486
LP3	0.499702	LP4	1.	LRHOBAR	1.
LRRBAR	0.01711	LW1	0.249279	LW1	0.190243
LW2	0.391139	LW3	0.305137	LW4	0.23572
LX0	0.96109	LX1	0.84004	LX2	-0.275511
LX3	0.	LX4	0.	RDEBT1	0.1
RE80	1.	RI1	1.2		
RI2					
(0)	0.3				
(1)	0.4				
(2)	0.2				
RN	0.0497	RPOIL	1.	RPXM1	-0.4
RPXM2	-0.1	RQNT0	0.5	RQNT1	0.2
RXCOM1	0.3	RXCOM2	-0.1	RXC1	1.
RXC2	0.5	RXM1	0.5	RXM2	1.
RXM3	0.5	RXO1	1.	RXO2	0.6
RXSM1	0.4	RXSM2	0.2	RX0	0.3308
RX1	1.	RX2	-0.8735	RX3	0.
RX4	0.0253	SBETA	0.33	SCOIL0	-0.269289
SCOIL1	0.845475	SCOIL2	-0.107335	SCOIL3	-0.049228
SCOIL4	0.082168	SC0	-0.4692	SC1	0.1119
SC2	-0.2217	SC3	0.5141	SC4	0.
SC5	0.07338	SE80	1.	SGBAR	0.21863
SIC0	-2.0635	SIC1	1.0424	SIC2	-0.4044
SIC3	-0.4044	SIC4	0.6924	SIC5	0.
SI0	-1.8218	SI1	1.8044	SI2	-0.8044
SI3	-0.1458	SI4	0.0276	SI5	-0.5901
SI6	0.	SK0	0.151409	SK1	0.156326
SK2	0.08606	SK3	-0.084767	SK4	-0.011731
SLAMBDAB	1.	SLAMBDAM	1.	SM0	-0.496407
SM1	0.174	SM2	-0.0083	SM3	0.

SM4	0.853	SM5	0.	SN	0.015462
SPXM0	0.034588	SPXM1	1.	SPXM2	0.161185
SPXM3	0.098791	SPXM4	-0.002739	SPX0	-0.078874
SPX1	0.186489	SP0	-0.00375	SP1	0.15316
SP2	0.63806	SP3	0.640904	SP4	0.017561
SRHOBAR	1.	SRLBAR	0.016	SRRBAR	0.01016
SR1	1.	SWT	0.152253	SW1	0.281
SW2	0.083	SW3	0.12	SW4	0.23572
SX0	0.4801	SX1	1.	SX2	-0.3763
SX3	0.	SX4	-0.0131	SYC0	4.19467
S11	0.	S12	0.4536	S13	0.0779
S14	0.0817	S15	0.1485	S16	0.0876
S17	0.7706	S18	0.1495	S19	0.237
S21	0.2147	S22	0.	S23	0.0412
S24	0.0222	S25	0.0444	S26	0.0153
S27	0.0533	S28	0.056	S29	0.1771
S31	0.0795	S32	0.0478	S33	0.
S34	0.28	S35	0.1477	S36	0.2623
S37	0.0261	S38	0.3375	S39	0.1228
S41	0.0332	S42	0.0238	S43	0.1269
S44	0.	S45	0.0908	S46	0.2213
S47	0.0148	S48	0.1344	S49	0.1007
S51	0.0713	S52	0.0303	S53	0.1269
S54	0.091	S55	0.	S56	0.0701
S57	0.0383	S58	0.1764	S59	0.083
S61	0.0277	S62	0.0155	S63	0.1014
S64	0.1284	S65	0.0554	S66	0.
S67	0.0107	S68	0.0702	S69	0.0654
S71	0.2764	S72	0.0818	S73	0.0099
S74	0.0094	S75	0.0317	S76	0.0135
S77	0.	S78	0.0189	S79	0.0323
S81	0.1015	S82	0.2031	S83	0.444
S84	0.3491	S85	0.4161	S86	0.2737
S87	0.0466	S88	0.	S89	0.1816
S91	0.1957	S92	0.144	S93	0.0717
S94	0.0382	S95	0.0653	S96	0.0561
S97	0.0396	S98	0.0573	S99	0.
TAU1	0.01	TAU2	0.3	TD	20.
T1	0.141	T2	0.087	T3	0.129
T4	0.07	T5	0.07	T6	0.05
T7	0.04	T8	0.2	T9	0.21
UBETA	0.34886	UCOIL0	-0.27685	UCOIL1	0.714385
UCOIL2	-0.060121	UCOIL3	-0.049228	UCOIL4	0.082168
UC0	-0.4558	UC1	0.1119	UC2	-0.2217
UC3	0.5141	UC4	0.	UC5	0.07338
UGBAR	0.21574	UIC0	-2.6023	UIC1	1.0424
UIC2	-0.4044	UIC3	-0.4044	UIC4	0.6924
UIC5	0.	UI0	-3.5946	UI1	1.3197
UI2	-0.3197	UI3	-0.2327	UI4	0.0401
UI5	-0.7185	UI6	0.	UK0	0.160666
UK1	0.156326	UK2	0.08606	UK3	-0.084767
UK4	-0.011731	ULAMBDAB	1.	ULAMBDAM	1.
UM0	-0.359953	UM1	0.174	UM2	-0.0083
UM3	0.	UM4	0.853	UM5	0.
UN	0.02971	UPXM0	0.051373	UPXM1	1.00785
UPXM2	0.470278	UPXM3	0.288235	UPXM4	-0.003422
UPX0	-0.017709	UPX1	0.339641	UP0	0.00144
UP1	0.15316	UP2	0.36393	UP3	0.383772
UP4	0.017561	URHOBAR	1.	URLBAR	0.016
URRBAR	0.0273	UR1	1.	USPGNPP	1.
USPGNPO	1.	USRRP	1.	USRR0	1.
UWT	0.354391	UW1	0.281	UW2	0.083
UW3	0.12	UW4	0.23572	UX0	0.2047
UX1	1.	UX2	-0.22	UX3	-0.2317
UX4	-0.0193	UYC0	4.56263	V12	0.2125
V13	0.1302	V14	0.1011	V15	0.0506

V16	0.0747	V17	0.2028	V18	0.2283
V19	0.	V22	1.	V23	0.1318
V24	0.0811	V25	0.0415	V26	0.0448
V27	0.0348	V28	0.1685	V29	0.
V32	0.1255	V33	1.	V34	0.1664
V35	0.0477	V36	0.1246	V37	0.0171
V38	0.3023	V39	0.	V42	0.1089
V43	0.2005	V44	1.	V45	0.0414
V46	0.1568	V47	0.0303	V48	0.2352
V49	0.	V52	0.1367	V53	0.1408
V54	0.1039	V55	1.	V56	0.0718
V57	0.0151	V58	0.2852	V59	0.
V61	0.2071	V62	0.1138	V63	0.2283
V64	0.1796	V65	0.0506	V66	1.
V67	0.0214	V68	0.1991	V69	0.
V71	0.642	V72	0.0711	V73	0.0503
V74	0.0465	V75	0.0195	V76	0.0384
V77	1.	V78	0.1324	V79	0.
V81	0.2535	V82	0.1027	V83	0.1395
V84	0.1261	V85	0.1261	V86	0.1261
V87	0.1261	V88	1.	V89	0.
V91	0.	V92	0.	V93	0.
V94	0.	V95	0.	V96	0.
V97	0.	V98	0.	V99	0.
WV8	0.	WV9	0.	W11	-1.
W12	0.1538	W13	0.182	W14	0.1138
W15	0.1217	W16	0.0733	W17	0.039
W18	0.2428	W19	0.0736	W21	0.1977
W22	-1.	W23	0.1512	W24	0.1012
W25	0.1034	W26	0.0677	W27	0.1111
W28	0.1941	W29	0.0738	W31	0.2022
W32	0.1078	W33	-1.	W34	0.1419
W35	0.1559	W36	0.0895	W37	0.0454
W38	0.1908	W39	0.0665	W41	0.1828
W42	0.1078	W43	0.2013	W44	-1.
W45	0.1204	W46	0.0692	W47	0.0371
W48	0.2283	W49	0.053	W51	0.1759
W52	0.1096	W53	0.2156	W54	0.1207
W55	-1.	W56	0.0798	W57	0.0489
W58	0.1871	W59	0.0625	W61	0.1664
W62	0.1032	W63	0.179	W64	0.0989
W65	0.1135	W66	-1.	W67	0.0372
W68	0.2518	W69	0.0499	W71	0.0935
W72	0.2217	W73	0.1278	W74	0.0667
W75	0.0936	W76	0.0475	W77	-1.
W78	0.1676	W79	0.1816	W81	0.2111
W82	0.1148	W83	0.1697	W84	0.1414
W85	0.1193	W86	0.1118	W87	0.0498
W88	-1.	W89	0.0822	W91	0.1279
W92	0.1301	W93	0.1464	W94	0.0817
W95	0.0989	W96	0.0546	W97	0.1549
W98	0.2055	W99	-1.	XNE	1.
X11	-1.	X12	0.124	X13	0.1158
X14	0.0739	X15	0.0896	X16	0.0491
X17	0.0997	X18	0.1951	X19	0.2529
X21	0.2212	X22	-1.	X23	0.0978
X24	0.0584	X25	0.0663	X26	0.0375
X27	0.0649	X28	0.1437	X29	0.3102
X31	0.1317	X32	0.0596	X33	-1.
X34	0.1375	X35	0.1107	X36	0.0875
X37	0.0258	X38	0.2857	X39	0.1614
X41	0.1126	X42	0.0586	X43	0.1776
X44	-1.	X45	0.0937	X46	0.0946
X47	0.0215	X48	0.2401	X49	0.2013
X51	0.1335	X52	0.0608	X53	0.1846
X54	0.0962	X55	-1.	X56	0.0589

X57	0.032	X58	0.2588	X59	0.1752
X61	0.1097	X62	0.0562	X63	0.1813
X64	0.1252	X65	0.0873	X66	-1.
X67	0.0218	X68	0.2242	X69	0.1944
X71	0.3499	X72	0.1385	X73	0.0742
X74	0.0397	X75	0.0668	X76	0.03
X77	-1.	X78	0.1142	X79	0.1867
X81	0.1361	X82	0.0762	X83	0.2113
X84	0.1355	X85	0.1317	X86	0.0907
X87	0.0292	X88	-1.	X89	0.1892
X91	0.2641	X92	0.1105	X93	0.1426
X94	0.0649	X95	0.0879	X96	0.0516
X97	0.09	X98	0.1885	X99	-1.

Table 2.1

Consumption Equation Estimates

Equation:

$$d\ln(C) = A0 + A1*\ln(W_{-1}/C_{-1}) + A2*d\ln(YD) + A3*d(RLR) ,$$

where: C = real consumption expenditures
W = real wealth
YD = real disposable income
RLR = real long-term interest rate.

Estimation results (1965-85, absolute values of t-ratios in parentheses):

A0	A1	A2	A3	SER
*	0.112	0.514	-0.222	0.015
	(2.8)	(7.8)	(0.8)	

* US -0.446; JA -0.461; GR -0.649; FR -0.457; UK -0.472; IT -0.463; CA -0.473; SI -0.469.

Wealth definition:

$$W = M/P + NFA/(ER*P) + ((NNPCAP*(1-GBAR)*RHOBAR)/RLBAR)*$$
$$(1 + (RLBAR/(RL+w1))*(CU-1) + (RLBAR/(RL+w2))*(RHO/RHOBAR-1)$$
$$+ (RLBAR/(RL+w3))*(G-GBAR)/(1-GBAR)) .$$

GBAR	RHOBAR	RLBAR	w1	w2	w3
*	1.0	0.016	0.281	0.083	0.120

* US 0.202; JA 0.101; GR 0.211; FR 0.163; UK 0.222; IT 0.184; CA 0.207; SI 0.188

Table 2.2
Export Price Equation Estimates

Equation:

$$\ln(PXM) = A0 + A1*d\ln(PGNPNO) + (1-A1)*d\ln(PFM) + A2*\ln(PGNPNO_{-1}) + A3*\ln(PFM_{-1}) + (1-A2-A3)*\ln(PXM_{-1}) + A4*T ,$$

where:
- PXM = price of manufactured exports
- PFM = price in foreign markets
- PGNPNO = GNP deflator excluding oil production
- T = linear time trend (1960=1).

Estimated Parameters (1965-1985, absolute values of t-ratios in parentheses):

	A0	A1	A2	A3	A4	R2
US	0.051	1.008	0.470	0.288	-0.003	0.995
	(2.21)	(6.82)	(3.73)	*	(2.42)	
JA	0.667	0.525	0.423	0.259	-0.013	0.988
	(3.48)	(6.86)	(3.66)	*	(3.39)	
GR	-0.035	0.813	0.077	0.047	0.000	0.996
	(1.15)	(9.37)	(0.87)	*	(0.19)	
FR	-0.116	0.458	0.170	0.104	-0.002	0.998
	(2.56)	(5.43)	(1.91)	*	(1.20)	
UK	0.279	0.741	0.374	0.229	-0.003	0.999
	(2.91)	(10.39)	(3.16)	*	(2.18)	
IT	0.524	0.640	0.643	0.394	-0.019	0.998
	(4.36)	(3.33)	(4.71)	*	(4.33)	
CA	0.035	0.667	0.159	0.097	-0.004	0.992
	(1.16)	(5.25)	(1.69)	*	(1.76)	
SI	0.035	1.000	0.161	0.099	-0.003	0.986
	(0.62)	*	(1.89)	*	(0.96)	

* Constrained parameter: see text

Table 2.3
Export Volume Estimates

Equation:

$$\ln(XM) = A0 + \ln(FM) + A1*REER + A2*REER_{-1} + A3*T ,$$

where:
- XM = manufactured exports volume
- FM = foreign markets activity variable
- REER = real competitiveness index
- T = linear time trend (1960=1) .

Estimated Parameters (1969-1985, absolute values of t-ratios in parentheses):

	A0	A1	A2	A3	RHO	R2
US	0.205	-0.220	-0.232	-0.019	0.257	0.990
	(4.56)	(1.46)	(1.52)	(8.10)		
JA	-2.031	-0.562	-0.443	0.025	0.390	0.996
	(29.52)	(3.01)	(2.35)	(8.50)		
GR	0.651	-0.231	-0.280	-0.010	0.312	0.998
	(30.53)	(2.58)	(3.60)	(9.11)		
FR	1.431	-0.200	-0.207	-0.008	0.536	0.995
	(27.46)	*	(1.12)	(2.85)		
UK	-0.499	-0.200	-0.177	-0.029	0.167	0.975
	(11.69)	*	(1.89)	(15.99)		
IT	-0.436	-0.200	-0.281	0.003	0.093	0.989
	(5.07)	*	(1.60)	(0.76)		
CA	-0.054	-0.423	-0.150	-0.002	0.576	0.994
	(0.45)	(2.92)	(1.01)	(0.48)		
SI	0.480	-0.376	0	-0.013	0.267	0.998
	(26.27)	(7.59)	*	(13.32)		
RW	0.331	-0.874	0	0.025	0.374	0.968
	(2.35)	(4.75)	*	(3.65)		

* Constrained parameter: see text

Table 2.4
Import Volume Equation Estimates

Equation:

$$\ln(IM) = A0 + A1*\ln(A) + (1-A1)*\ln(A_{-1}) + A2*T + A3*\ln(PIM/PGNPNO) + A4*\ln(PIM_{-1}/PGNPNO_{-1}),$$

where:
- IM = volume of manufactured imports
- A = total domestic absorption
- PIM = price index of imports
- T = linear time trend (1960=1).
- RHO = first-order autocorrelation coefficient .

Estimated Parameters (1965-1985, absolute values of t-ratios in parentheses):

	A0	A1	A2	A3	A4	RHO	R2
US	-3.595	1.320	0.040	-0.233	-0.719	-0.348	0.996
	(146.59)	(8.29)	(38.69)	(2.61)	(7.27)		
JA	-3.184	1.000	0.031	-0.607	-0.209	0.278	0.984
	(18.63)	*	(3.44)	(2.36)	(0.79)		
GR	-2.140	0.862	0.031	-0.765	0	0.218	0.995
	(41.60)	(3.60)	(13.21)	(4.65)	*		
FR	-2.178	1.322	0.020	-0.057	-0.719	0.836	0.999
	(21.77)	(7.65)	(4.52)	(0.60)	(7.07)		
UK	-2.103	0.804	0.028	-0.500	0	0.704	0.979
	(15.93)	(2.12)	(4.23)	*	*		
IT	-1.912	1.631	0.013	-0.045	-0.471	0.925	0.997
	(2.78)	(8.32)	(0.50)	(0.20)	(1.89)		
CA	-2.141	1.643	0.030	-0.309	-0.200	0.368	0.994
	(12.97)	(6.07)	(3.67)	(1.02)	*		
SI	-1.822	1.804	0.028	-0.146	-0.590	0.280	0.996
	(24.55)	(5.88)	(7.50)	(1.26)	(3.49)		

* Constrained parameter: see text

Table 2.5

Oil Consumption Estimates

Equation:

$$\ln(CO) = A0 + A1*d\ln(GDP) + A2*\ln(GDP_{-1}) + (1-A2)*\ln(CO_{-1}) + A3*\ln(POIL_{-1}/PGNPNO_{-1}) + A4*d\ln(POIL/PGNPNO) ,$$

where:
- CO = real oil consumption
- GDP = real gross domestic product
- POIL = world oil price converted to domestic currency
- PGNPNO = non-oil GDP deflator .

Estimated Parameters (1965-85, absolute values of t-ratios in parentheses):

	A0	A1	A2	A3	A4	R2
US	-0.277	0.714	0.082	-0.049	-0.060	0.961
	(5.59)	(3.14)	(4.72)	(12.41)	(2.73)	
JA	-0.311	1.438	0.082	-0.049	-0.037	0.984
	(5.65)	(4.45)	(4.72)	(12.41)	(0.99)	
GR	-0.310	1.430	0.082	-0.049	-0.134	0.983
	(5.31)	(6.27)	(4.72)	(12.41)	(6.76)	
FR	-0.353	2.361	0.082	-0.049	-0.082	0.993
	(6.02)	(8.61)	(4.72)	(12.41)	(4.72)	
UK	-0.317	1.521	0.082	-0.049	-0.043	0.775
	(5.26)	(2.35)	(4.72)	(12.41)	(0.78)	
IT	-0.286	0.957	0.082	-0.049	-0.079	0.979
	(5.34)	(3.65)	(4.72)	(12.41)	(3.17)	
CA	-0.102	0.981	0.082	-0.049	-0.138	0.974
	(2.43)	(4.14)	(4.72)	(12.41)	(3.06)	
SI	-0.269	0.845	0.082	-0.049	-0.107	0.989
	(5.22)	(2.93)	(4.72)	(12.41)	(5.68)	

Table 2.6

Commodity Import Equation

Equation:

$$\ln(IC) = A0 + A1*d\ln(GDP) + A2*\ln(GDP_{-1}) + A3*\ln(PCOM/PGNP) ,$$

where: IC = real commodity imports
PCOM = world commodity price in domestic currency.

Estimation Results (1965-85, absolute values of t-ratios in parentheses):

A0	A1	A2	A3
*	1.042	0.692	-0.404
	(3.89)	(11.72)	(9.14)

* US -2.602; JA -2.491; GR -1.950; FR -1.979; UK -2.791; IT -2.305; CA -3.471; SI -2.064

TABLE 2.7

Non-oil GNP Price Deflator Equation

Equation :

$$d\ln(PGNPNO) = const + (1-\delta)d\ln(PGNPNO_{-1}) + \phi MCU + \delta\pi^{e}$$

PGNPNO - Non-oil GNP price deflator
MCU - mean of capacity utilization for current and preceding year
π^{e} - expected inflation

Esimation Results (1968 - 1986)

	const	$(1-\delta)$	δ	ϕ	R^2	D-W
CAN	.0017	.685	.315	.153	.23	2.19
	(0.44)	*	(1.93)	(2.27)		
USA	.0014	.686	.364	.153	.21	2.62
	(0.48)	*	(1.90)	(2.27)		
JAP	.0001	.507	.493	.153	.47	2.60
	(0.02)	*	(4.14)	(2.27)		
ITA	-.0027	.585	.415	.153	.73	2.32
	(-0.52)	*	(3.33)	(2.27)		
GER	.0033	.435	.565	.153	.62	2.05
	(1.46)	*	(4.60)	(2.27)		
FRA	.0009	.617	.383	.153	.62	1.96
	(0.29)	*	(3.93)	(2.27)		
UKM	.0001	.532	.468	.153	.29	2.42
	(0.01)	*	(2.90)	(2.27)		
SMALL	-.0038	.362	.638	.153	.66	1.79
	(-1.10)	*	(3.14)	(2.27)		

* - constrained parameter

Table 2.8

MONEY DEMAND EQUATION ESTIMATES

Equation:

$$Ln(M/PGNP) = A0 + A1*Ln(GNP) + A2*RS + A3*Ln(M_{-1}/PGNP_{-1}) + A4*TCA$$

where:
- M = monetary base
- PGNP = gross national product deflator
- GNP = real gross national product
- RS = short-term interest rate
- TCA = linear time trend for Canada (1981 = 1), capturing changes to reserve requirements introduced in February 1981

Estimated Parameters (1965-1985, SUR technique used, absolute values of t-ratios in parentheses)*:

	A0	A1	A2	A3	A4	$\bar{R}^2$
US	-0.528	0.174	-0.0083	0.853		0.434
	(3.873)	(6.279)	(9.567)	(40.147)		
JA	-0.376	0.174	-0.0083	0.853		0.981
	(3.823)	(6.279)	(9.567)	(40.147)		
GR	-0.460	0.174	-0.0083	0.853		0.872
	(3.693)	(6.279)	(9.567)	(40.147)		
FR	-0.481	0.174	-0.0083	0.853		0.204
	(3.607)	(6.279)	(9.567)	(40.147)		
UK	-0.471	0.174	-0.0083	0.853		0.777
	(4.576)	(6.279)	(9.567)	(40.147)		
IT	-0.278	0.174	-0.0083	0.853		0.952
	(2.924)	(6.279)	(9.567)	(40.147)		
CA	-0.459	0.174	-0.0083	0.853	-0.016	0.978
	(4.36))	(6.279)	(9.567)	(40.147)	(6.282)	
SI	-0.501	0.174	-0.0083	0.853		0.893
	(4.009)	(6.279)	(9.567)	(40.147)		

* Constrained Parameters